DOCUMENT RESUME

ED 141 249 SO 010 134

TITLE	Design and Drawing Skills. Selected Results from the First National Assessment of Art, June 1977.
INSTITUTION	Education Commission of the States, Denver, Colo. National Assessment of Educational Progress.
SPONS AGENCY	National Center for Education Statistics (DHEW), Washington, D.C.
REPORT NO	NAEP-66-A-01
PUB DATE	Jun 77
CONTRACT	OEC-0-74-0506
NOTE	124p.; Tables 1-15 may not reproduce clearly due to small print
AVAILABLE FROM	Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (Stock Number 017-080-01716-4, $2.50 paperbound)
EDRS PRICE	MF-$0.83 HC-$6.01 Plus Postage.
DESCRIPTORS	Age Groups; *Art; Art Education; *Art Expression; Comparative Analysis; *Educational Assessment; Elementary Secondary Education; Freehand Drawing; *National Surveys; Tables (Data); *Test Results
IDENTIFIERS	National Assessment of Educational Progress

ABSTRACT

The first comprehensive attempt to measure student achievement in art on a national scale at the elementary, junior high, and high school levels is described. The assessment was conducted during 1974-75 with groups of nine-, 13-, and 17-year-olds. This report examines four design and drawing exercises that measure art-production activities. Art production objectives include ability to (1) produce original works of art, (2) express visual ideas fluently, (3) produce works of art with a particular expressive content, and (4) demonstrate application of media and forming processes. This report contains comparative score tables of the three age groups accompanied by drawings which were judged to be acceptable, unacceptable, or above average. The exercises involved drawing people seated at a table as seen from one end, a bedroom wall which incorporates a door, and three children at a playground at various distances from the viewer. In another drawing exercise, students were asked to show motion by using parts of the human anatomy or expressive devices. Techniques included foreshortening, overlapping, tilted planes, and point perspective. Results showed similar scores in males and females, lower scores in blacks and low-metropolitan students, and greatest increases in achievement between the ages of nine and 13. Original plans for comprehensive assessment of art education were curtailed in 1973 by budgetary changes. Additional exercises will be included in the 1978-79 art assessment program. (AV)

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NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

DESIGN AND DRAWING SKILLS

Selected Results From the First National Assessment of Art

Art Report No. 06-A-01

June 1977

SP 010 134

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Suite 700, 1860 Lincoln Street
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Roy H. Forbes, Director

Contract Agency:
NATIONAL CENTER FOR EDUCATION STATISTICS

Contract No. OEC-0-74-0506

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ACKNOWLEDGMENTS

Many people have made substantial contributions to this report. Not the least of those to be gratefully acknowledged are the administrators, teachers and students who cooperated so generously in making the assessment possible.

Special acknowledgment must go to Laura Chapman, Hilda Lewis, Ronald Silverman and Brent Wilson for their helpful criticisms of an earlier draft of this report. Their suggestions and encouragement have substantially improved the final report.

The actual preparation of the report was a collaborative effort of the National Assessment of Educational Progress staff. Special thanks must be given to the following people: William Ankeny and Susan Sullivan for data processing support, Ava Powell for preparation of the graphs and technical proofreading, Marci Reser and Jessica Grant for production, and Rex Brown for editing. Technical analysis for this report was planned and supervised by Sarah Knight; the report was planned and written by Robert Crane.

Roy H. Forbes
Project Director

CHAPTER 1

INTRODUCTION

Why Assess Art?

Art is among the most complex, diverse and important areas of human endeavor. Central to every culture, it provides the expressive outlets and aesthetic experiences without which life becomes anaesthetic. It communicates both the private, inner worlds of individual's emotions, experiences and thoughts and the culture's basic values as well. No appraisal of American education that ignores this dimension of human experience would be complete.

While many aspects of art are essentially unspecifiable and unquantifiable, other aspects of art — the acquisitions and application of knowledges, skills, sets of rules and standards — can be defined, specified, taught and measured. The art teacher tries to attend to all aspects of the art experience. He or she hopes to nuture creativity and establish congruence between the self and art when and however possible. The ways this can be accomplished are as varied as the people involved. The teacher plans for and delivers specific information about art to the student. The student is expected to perform certain tasks, to practice certain techniques and to apply specific rules and knowleges. The assumption of art education is that knowledge and skill acquisition in art are integral to personal appreciation and fulfillment in the arts.

This national assessment of art is concerned with student achievement in those elements of art education that are valued and have been established by time and trial as the foundation for participation in the experience of art. In establishing the art assessment, National Assessment followed a simple rule of thumb: If art educators considered something important enough to be taught, NAEP considered it important enough to be assessed.

The national assessment of art is the first comprehensive attempt to measure student achievement in art on a national scale at the elementary, junior high and high school levels. Since very few art tests even exist, National Assessment had to break new ground in this effort; if for no other reason, the NAEP effort would be important simply as an important precedent.[1] The art assessment is recognition of the fact that art *can* be assessed and that certain aspects of art should even be periodically assessed. It makes us all aware of the broad parameters and complexity of art education and shows, at the same time, that much more can be assessed than most of us imagined. Finally, the national assessment of art puts the value of art into a much needed perspective.

Historical Overview

Development of the art assessment began in 1965 with the development of a general set of art-education objectives. These objectives placed a rather heavy emphasis on the purely cognitive aspects of art education. From 1965-69, art exercises were written and reviewed using this set of objectives as the guideline. Reviews of these exercises by art

[1] According to Oscar Krisen Burros, ed., *7th Mental Measurement Yearbook* (Highland Park, N. J.: The Gryphon Press, 1972), Vol. 1, 521-22, only four tests to assess art have been developed. None of these are as comprehensive as the NAEP assessment.

educators suggested that the objectives were somewhat too narrow in scope. Therefore, in 1969 the art objectives used by National Assessment were revised. The expanded objectives included the affective and production facets of art education and also enlarged upon each subobjective so that they included illustrations of the objective's application for each age (see Appendix A for the complete set of art objectives).

From 1969-73, more art exercises were developed to reflect the goals specified in the revised objectives. The projected art assessment was to use about 210 minutes of assessment time for each age, with the exercises distributed across four and one-half booklets of group-administered materials and one and one-half or two booklets of individually administered materials. There were to be multimedia art-production exercises as well as many exercises involving color-picture stimuli; large, color reproductions; and written responses.

Unfortunately, due to budgetary changes during 1973, the art assessment plans had to be curtailed. Since it was deemed important to gather data on art achievement, even if on a limited scale, art exercises that could not be administered in a group format or that required extensive materials such as paints, papers, scissors and models were withdrawn from the assessment. Further, the number of exercises calling for written responses was reduced, and all picture stimuli were printed in black and white.

Given these restrictions, exercises were identified for use in the assessment. The number of exercises representing an objective for a given age was determined by the relative importance of that objective for that age. In the opinion of art-education consultants, the percent of the total assessment time that should be devoted to each art objective at each age was as follows:

Assessment Age	Art Objectives I & II	III	IV & V
9	40%	30%	30%
13	40	25	35
17	40	20	40

The first assessment of art was conducted during 1974-75. Responses were collected from 9- and 13-year-olds as well as 17-year-olds in and out of school. National Assessment was unable to solicit responses from an adult-respondent sample for this assessment.

On the average, 130 minutes of assessment time were devoted to art at each assessment age. This was roughly equivalent to 110 exercises administered at each age. Most (about 95%) of the exercises were given to both 13- and 17-year-olds; about 80% of all art exercises were given to all three age levels. There were very few exercises given at one age only.

After all the data were collected, one-half of the exercises requiring individualized scoring were scored for all ages. A group of scorers, who were experienced in codifying written responses to exercises but who were not art specialists, were given intensive training in the procedures for scoring art responses. They were trained to score written responses as well as drawings. Two art-education, doctoral students acted as scoring trainers and monitors during the scoring process.

Following the assessment and scoring, approximately one-half of the total number of exercises used in the assessment were designated for release. They represent about one-half of the exercises devoted to each art objective at each age.

Design and Drawing Skills

This report examines four design and drawing exercises that measure students' art-production abilities. Four additional production items that were assessed have been held back for use in the reassessment of art in 1978-79. The data provide valuable insights about the abilities of students in specific aspects of drawing. For example:

- In one unreleased exercise, students at age 9, 13 and 17 were asked to produce an imaginative work of art by drawing the design for a piece of jewelry. The item also

demanded some understanding of the intrinsic demands of space or shape.

- The expression of ideational fluency was measured in another unreleased exercise. Nine-, 13- and 17-year-olds were asked to draw a series of sketches representing ideas for a work of art. While this was the main purpose of the task, the drawings were judged for imagination as well.

- Two items assessed student abilities to produce works of art that fulfilled the intrinsic demands of space or shape. One asked students to design a bedroom wall and is discussed in detail in Chapter 2. The other was unreleased. In it, 13- and 17-year-olds were to design a package for a specified product. The drawings generated by each of these items were also scored for imagination.

- Four production items measured the abilities of students to produce drawings that contained various visual conceptions, such as spatial conceptions or expressions and emotions. In one very complex exercise, students were asked to draw four people seated at a table from a particular perspective. Another asked 9-year-olds to draw three people on a playground. They are discussed in detail in Chapter 3. Two similar items measured expressions and emotions. One, asking students to draw a person running, is discussed in Chapter 4. The other is unreleased.

These art-production items do not begin to cover the range of art production thought to be important by art educators. This is clear when they are compared to the complete range of production objectives found in the National Assessment art objectives (see Illustration 1).

ILLUSTRATION 1. Art-Production Objectives

PRODUCE WORKS OF ART

A. Produce original and imaginative works of art.

All Ages

1. Produce an imaginative work of art, such as an animal or other object that looks like no other object has looked before.

2. Given various forms or objects, invent new forms.

B. Express visual ideas fluently.

All Ages

1. Be fluent in generating ideas for works of art.

2. Be fluent in producing visual ideas.

3. Be fluent in the use of media.

4. Be fluent in composing visually.

C. Produce works of art with a particular composition, subject matter, expressive character or expressive content.

Age 9

1. Produce a work of art that fulfills the intrinsic demands of a space or shape.

2. Produce a work of art containing specified subject matter.

3. Produce a work of art with a particular mood, feeling or expressive character.

Age 13 (in addition to age 9)

1. Produce a work of art with a particular mood, feeling or expressive character.
   a. Produce a work that fits the mood of a poem or piece of music.
   b. Produce a work that shows a mood such as calmness, excitement, gaiety or sadness.
   c. Produce a work (landscape, city or town) that has a particular feeling such as coolness, loneliness, warmness, wetness or spookiness.

2. Produce a work of art with meaning based on the use of established symbols.

3. Produce a work of art with meaning based on the use of new symbols.

4. Design a poster that advertises an event,

product, etc.

5. Produce a work that has a particular type of order or variety.

6. Modify the form of an object to improve its aesthetic quality or functional character.

Ages 17, Adult (in addition to age 13)

1. Produce a work of art that has a particular composition, such as vertical, horizontal, diagonal, concentric, symmetrical and asymmetrical, that uses deep or shallow space; or that has an open or closed composition.

D. Produce works of art that contain various visual conceptions.

Age 9

1. Demonstrate the ability to represent spatial conceptions (one person standing in front of another, something close and something far, a street and a building, etc.).

2. Demonstrate the ability to represent accurately (depict the essential attitude and position of a model and indicate such things as clothing patterns).

3. Produce an accurate reportage drawing.

4. Produce works in which the subject-matter aspects indicate expressions and emotions (running, walking, falling, laughing, crying, anger, fright, happiness, etc.).

Ages 13, 17, Adult (in addition to age 9)

1. Demonstrate the ability to represent an object from different viewpoints and under different light conditions.

E. Demonstrate knowledge and application of media, tools, techniques and forming processes.

Age 9 (None)

Ages 13, 17, Adult

1. Perform processes such as coiling a pot, cutting and printing a linoleum block, mixing specific colors, etc.

2. Select the appropriate tools to accomplish certain tasks such as printmaking, clay modeling, etc.

In developing the art objectives, National Assessment was aware of the fact that resources would not permit a comprehensive survey of student abilities to produce art. Nevertheless, NAEP considered it important to acknowledge as full a range of production goals as possible in the objectives. Hopefully, some of the goals that have not been measured will be measured in future assessments. Their exclusion from the first assessment does not suggest that they cannot be assessed.

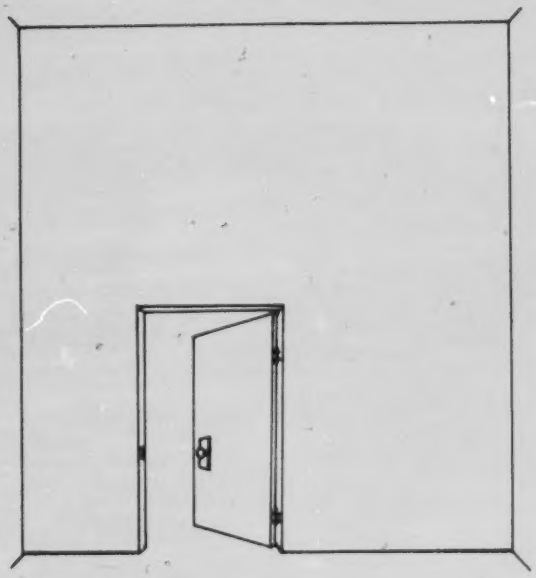
CHAPTER 2

DESIGNING A FUNCTIONAL SPACE

In one drawing exercise, 13- and 17-year-olds were asked to produce a drawing of a bedroom wall given the following instructions:

> *"Imagine that a friend of yours has been given permission to paint a design or picture on his bedroom wall. Since the wall has a door near the middle, your friend has trouble planning the design. He asks you to help, and you agree to show him how you would make a design or picture that fits the shape of his wall.*
>
> *" In the space on the next page make a sketch for the wall. Use any idea you wish; just make sure your design fits nicely into the space."*

Picture Used in Designing a Bedroom-Wall Exercise



The item challenges students to consider a given functional space and to enhance the appearance of that space through the use of an integrated design.

The 13- and 17-year-olds were given about seven minutes to complete the drawing. Nine-year-olds had eight minutes.

Judgments of the student drawings were based on three criteria of design:

1. Does the design fit successfully within the shape of the wall? (Three possible points.)
2. Do the elements relate to one another in an integrated, coherent or consistent manner? (Two possible points.)
3. Does the door function as an integral part of the overall design plan? (One possible point.)

Acceptable completion of the exercise was based on a total of three points from any of the categories. This scoring system was weighted to favor the organization of the space over a good pictorial approach. Students could receive an acceptable score (three points) by successful use of the wall shape alone. The design categories are detailed in the following section.

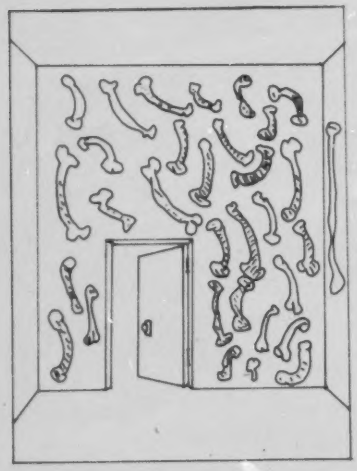
Design Categories

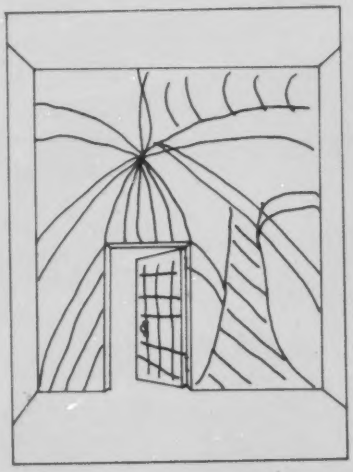
Wall Shape

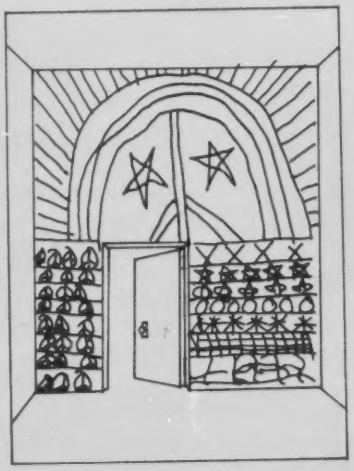
This category was the primary one of the exercise, since the respondents were asked to take into account the "unusual" shape of the room when planning the design. Most

successful designs used both sides of the door without crowding the edges and had elements that flowed into the longer space above the door. There was obviously a subjective element in the scoring of this category, as the scorer had to rely on his own "sense of rightness" in determining if the criterion had been met.

Acceptable examples for Wall Shape:



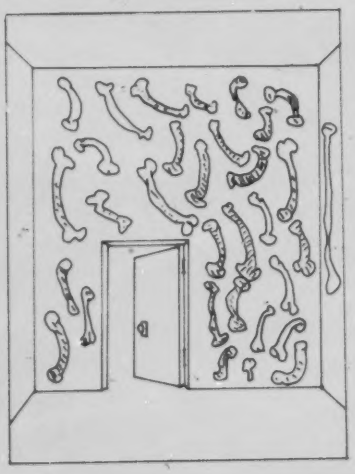




Elements Related

Elements refer to such things as representations of objects and qualities such as lines, shapes and textures. The assessment was made on the basis of the relationship of elements *without* regard to how they functioned within the wall and door space. In other words, it was possible to have things, objects or shapes that were congenial with one another and yet did not work well within the format.

Acceptable examples of Elements Related:



In this example the relatedness is achieved through the repetition of the bone-like motif.

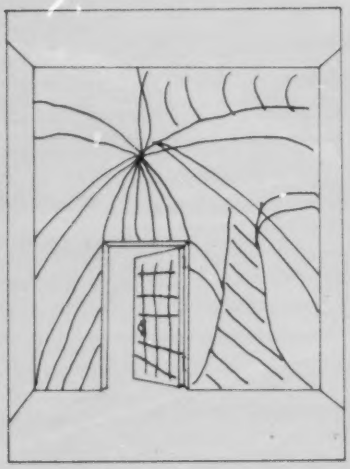
This example shows great consistency throughout.

There is consistency of subject matter and treatment, which places this example well within the category.

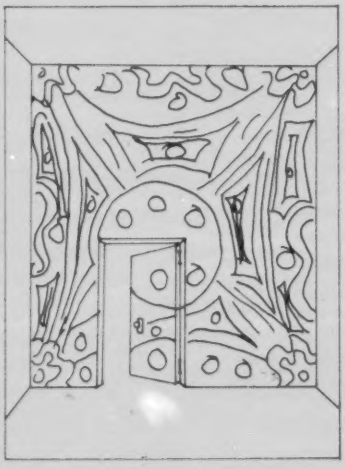
Door Function

Credit for this category was achieved in two main ways. The door could contain a part of the design that related to the design outside the door, or the drawing could move around the door so as to cradle it in a successful manner.

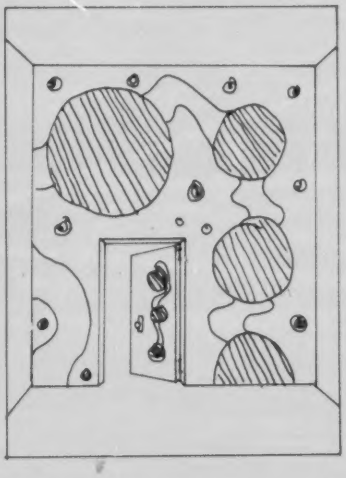
Acceptable examples for Door Function:



This example is marginal but included in the category since several of the elements cradle and cue on the door. However, the design on the door does not integrate.



This example shows a highly successful integration of the door into the design.



The door repeats the larger motif.

Figure 1 gives the percentages of student drawings at all three ages that received at least three points in the design categories and, therefore, were considered acceptable.

The percentages increase quite dramatically between the ages of 9 and 13 (there is a 15 percentage-point increase in this four-year period), and less so between the ages of 13 and 17 (there is a 6-point spread in this four-year period).

Figure 2 provides the percentages of students receiving each of the possible point totals for this drawing. Students could receive up to a maximum of eight points for their drawings, although they only needed three points to successfully complete the item. As might be expected, the differences between ages tended to show up at the higher point totals. Although the percentages of students receiving exactly three points for their drawings

FIGURE 1. Percentage of Students With at Least Three Points in Design Categories: Ages 9, 13 and 17

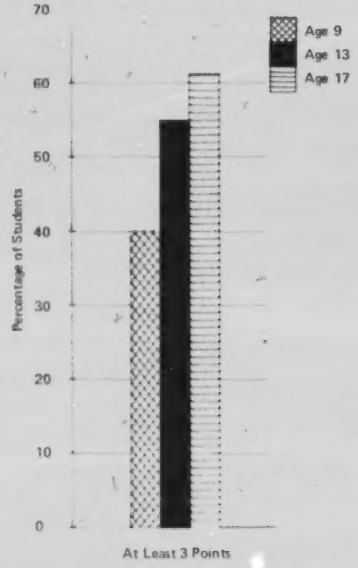
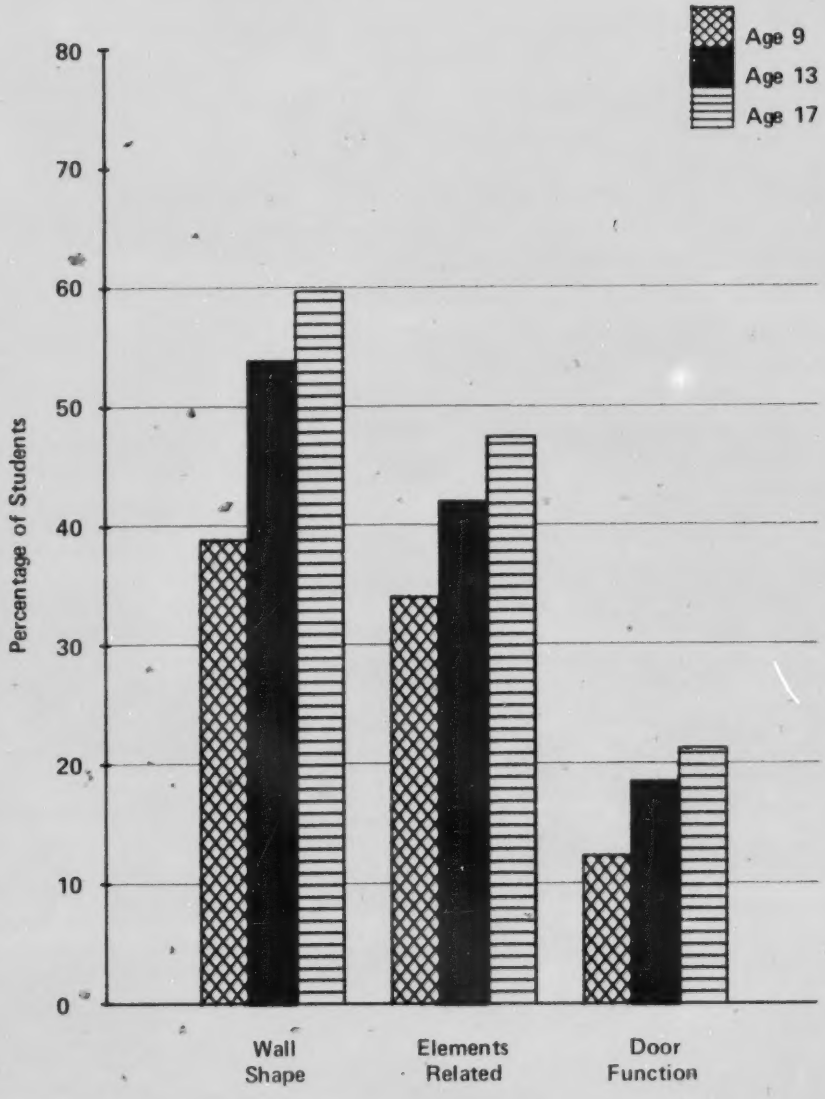


FIGURE 2. Percentage of Students Within Each Possible Score-Point Category: Ages 9, 13 and 17

FIGURE 3. Percentage of Student Responses in Each Design Category: Ages 9, 13 and 17



were about the same at all three ages, more 13- and 17-year-olds received four, five, six or seven points for their drawings. Five points was the most common score for drawings that were acceptable.

The percentages of students' responses in each design category are found in Figure 3. Since the exercise instructions stressed using the wall shape, it is not surprising that more students received points in that category than in either of the other two categories. Since the item did not specifically ask that students integrate the door into the design, the much smaller percentages in this category might also be expected.

Although students were not asked to be imaginative and the acceptability of the drawings was not judged on the presence of imaginative elements, the drawings were scored for this dimension. Two categories of imagination were identified:

1. Does the design contain unusual or surprising aspects?

2. Does the design contain elements combined in a novel manner?

They are explained in the following section.

Imaginative Elements in Bedroom-Wall Drawings

Unusual Elements

Unusual and surprising aspects referred to such things as scale (such as a large head) objects outside the conventional expectations for bedroom-wall designs, or formal aspects that give the space a strikingly vivid intensity. Examples of unusual elements appear on page 11.

Novel Combination

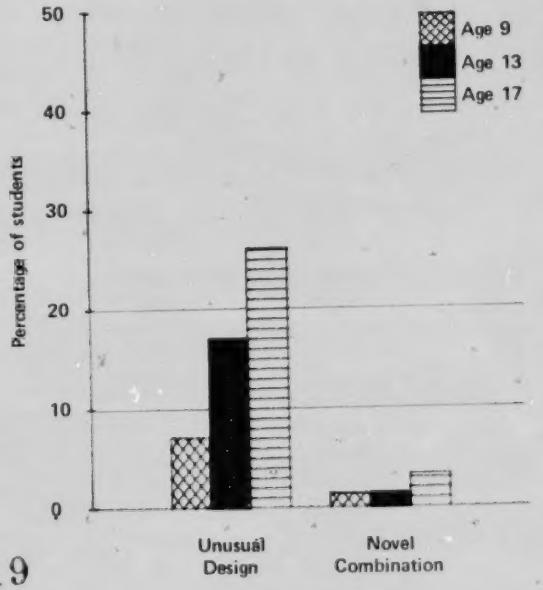
This category refers to the outcome of what might be called "visual inventing," i.e., unexpected objects are placed next to one another or are combined into a single object. The category also pertains to such things as surprising combinations of sizes and contrasts of very different shapes.

The percentage of students at each age using these creative elements is found in Figure 4.

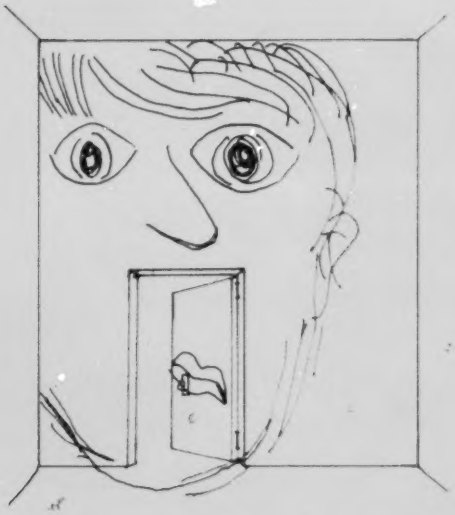
There is clear progression in the percentage of students using novel designs from age 9 through 17. These data tend to go against one current theory of artistic development that suggests a decrease in imagination with age. The highest percentage of imaginative designs on this item appears at ages 13 and 17. Nine-year-olds appear to be the most conventional. Since students were not specifically asked to be imaginative, their responses may be even more indicative of the creative process.

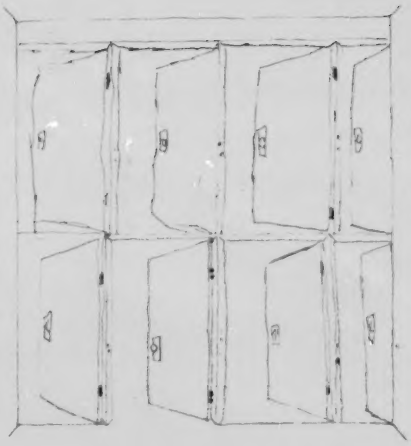
The percentages of students that used novel combinations in their drawings were quite low at all three age levels. Contrary to the belief of many, these results suggest that the development of higher-level drawing skills may have little to do with increased frequency in the combining of objects in a drawing situation. Examples appear on page 12.

FIGURE 4. Percentage of Students Using Imaginative Elements: Ages 9, 13 and 17

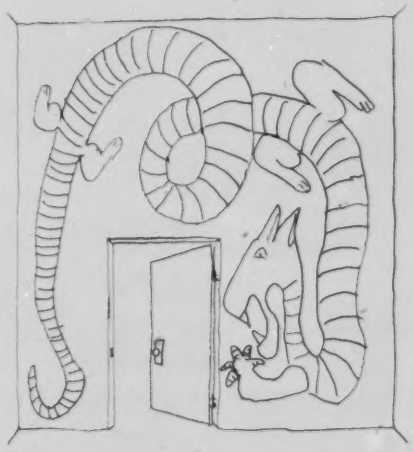


Acceptable examples of Unusual Elements:

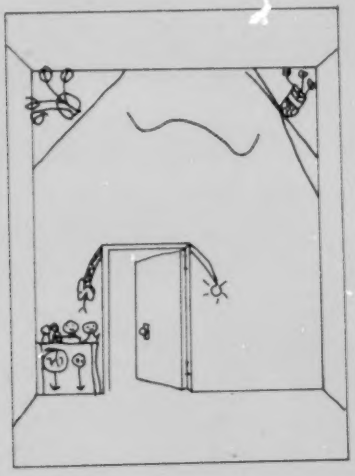




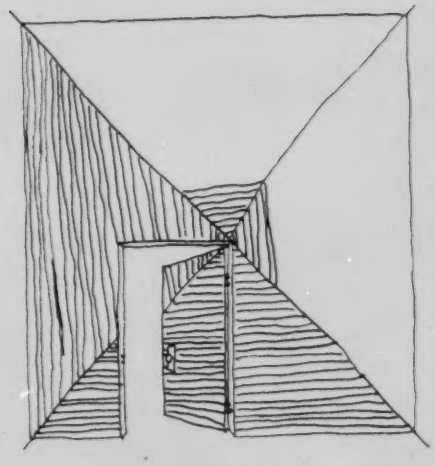
The surprising scale and placement of the head in this example and the repetition of doors in the next qualify them for this category.



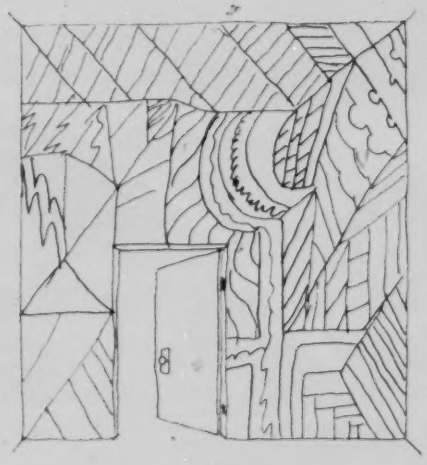
Acceptable examples of Novel Combination:

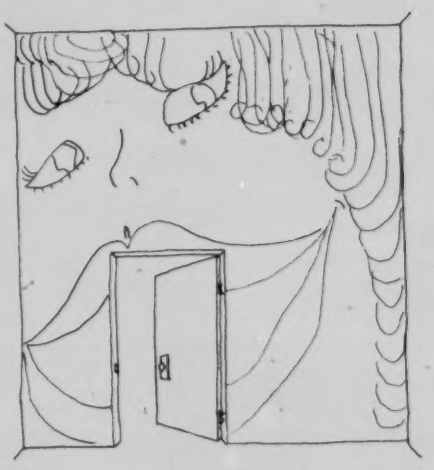


This example, although weak, has the snake over the children and the sun form at the end of the snake's tail qualifying design for the category.



This is an example of a design that "broke the rules" for wall space and received credit. The white triangles balance the striped triangles. Although the design might be unfinished, the structure of the design helps the space work.

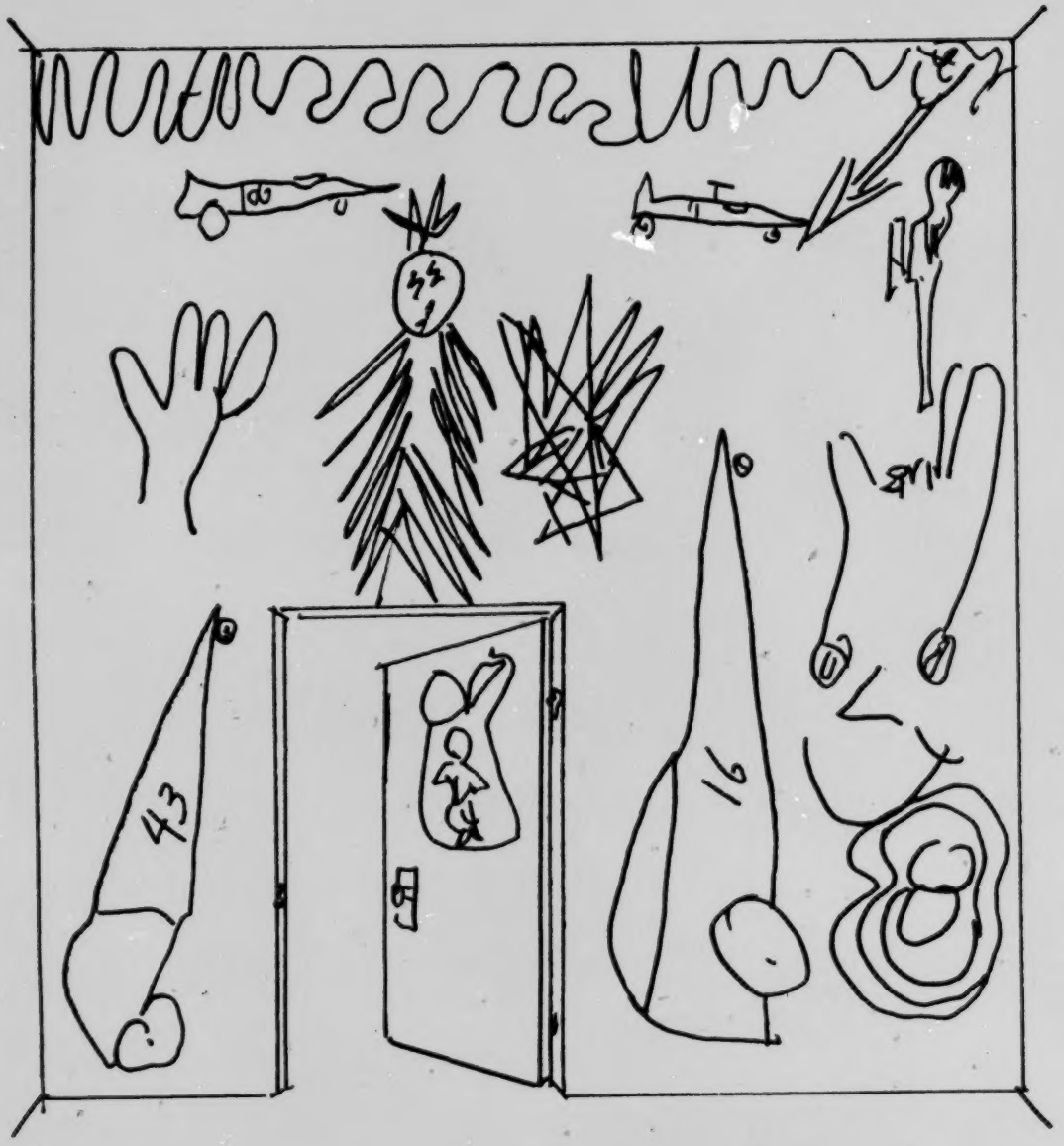




The illustrations following provide examples of the range of drawing skills at each age level. They are categorized as unacceptable (less than three points), average (three through five points) and above average (six or more points).

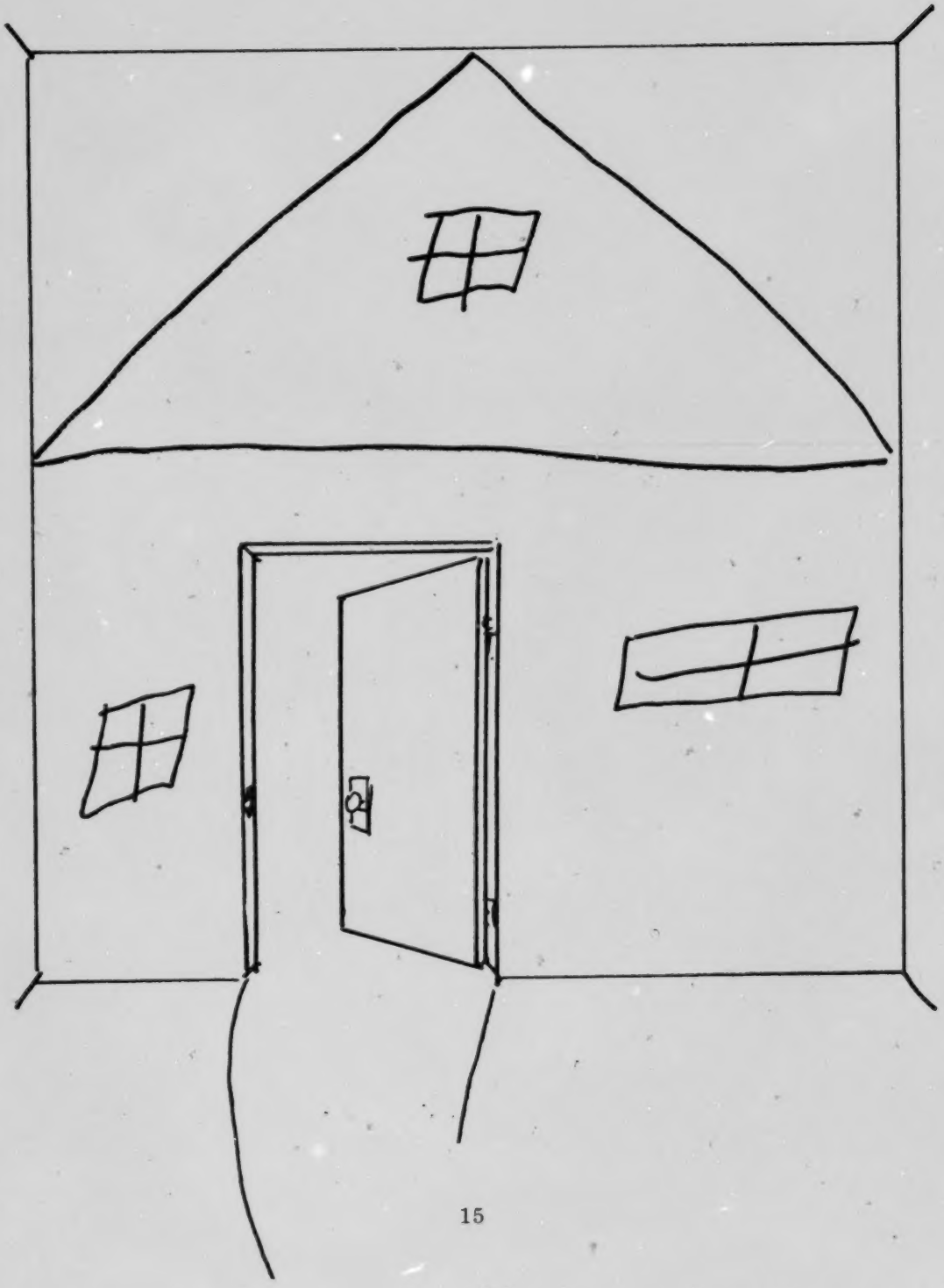
Age 9
Unacceptable (0 Points)

Age 9
Unacceptable (1 Point)

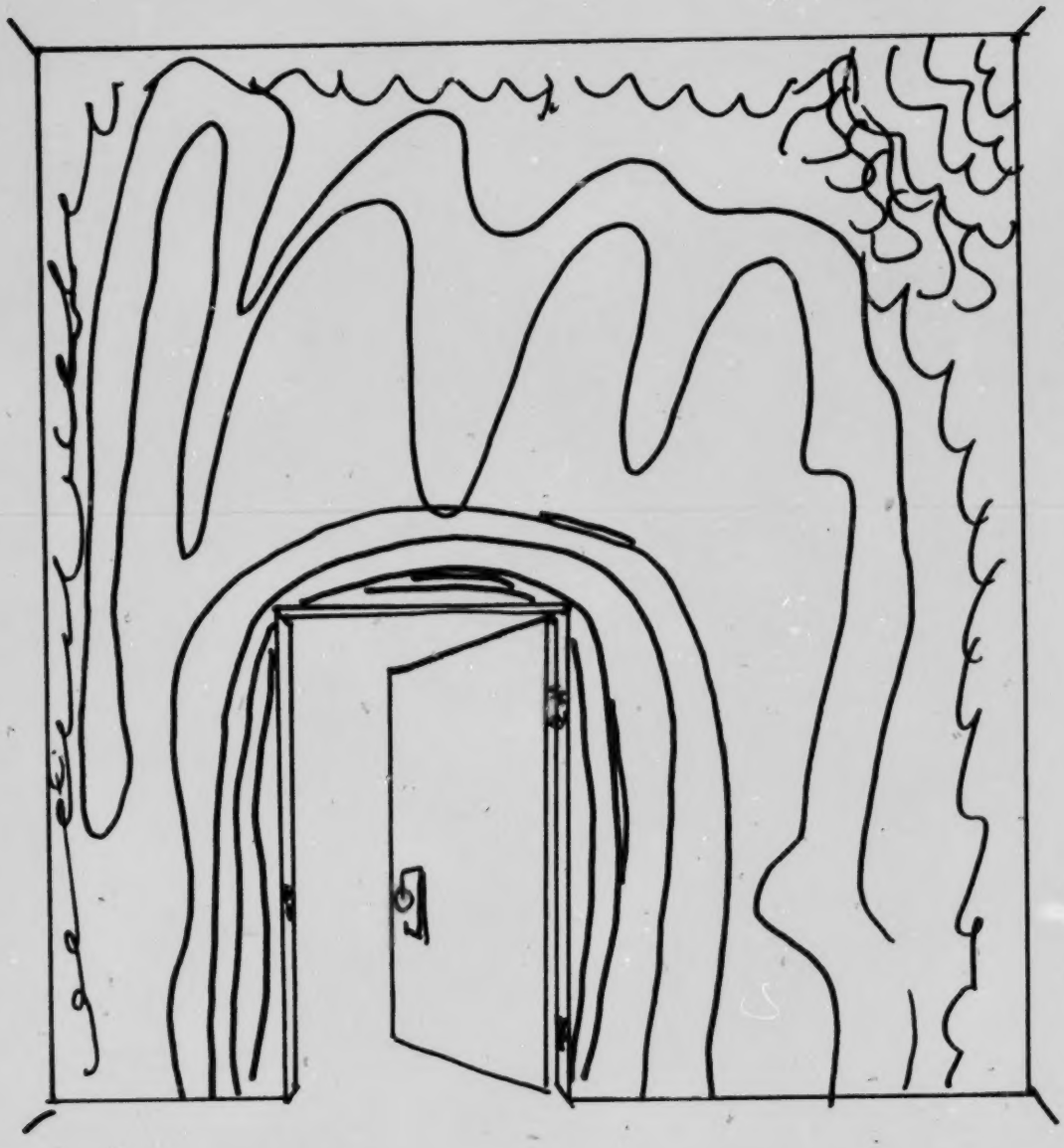


23

Age 9
Average (4 Points)

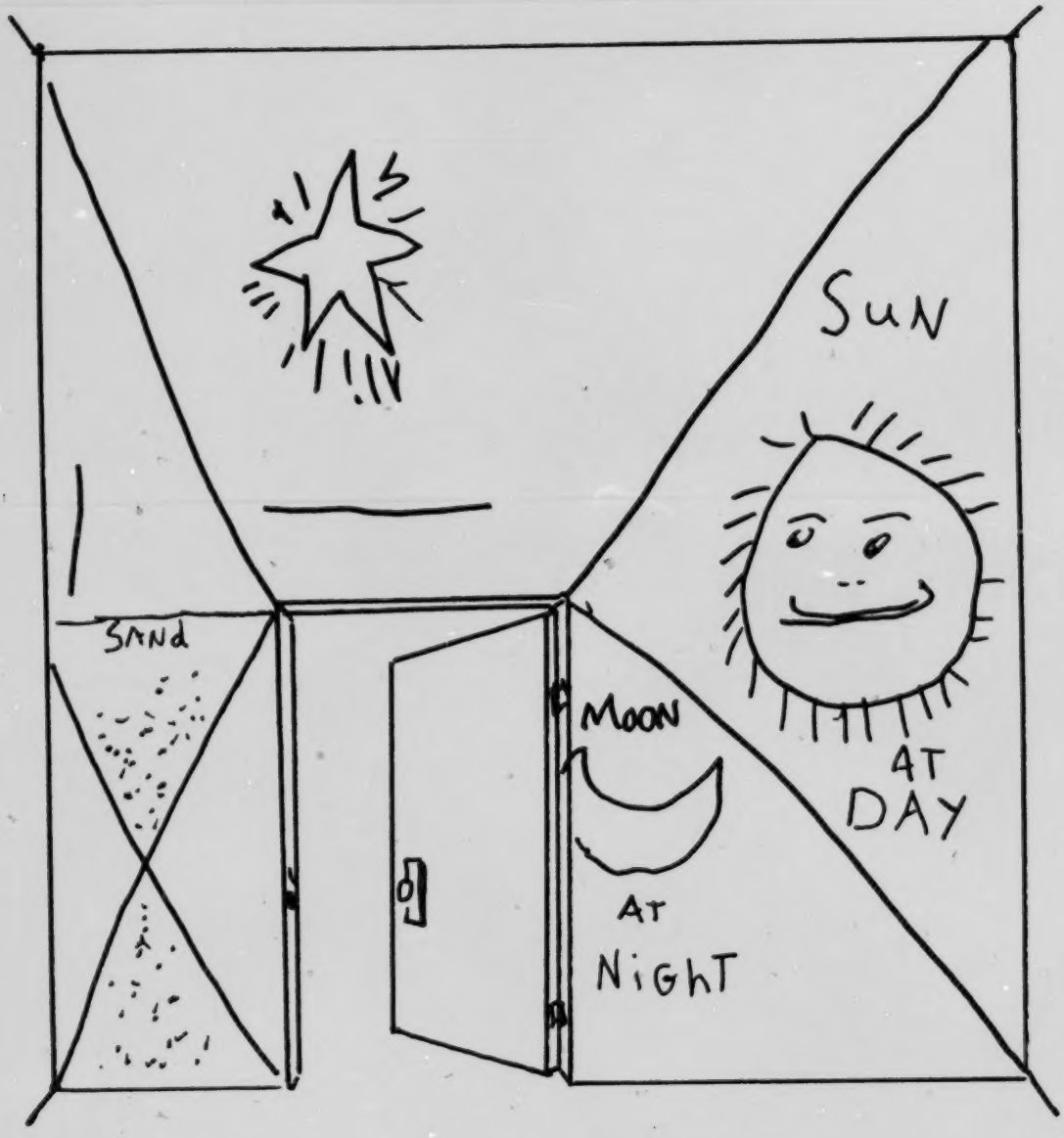


Age 9
Average (5 Points)



25

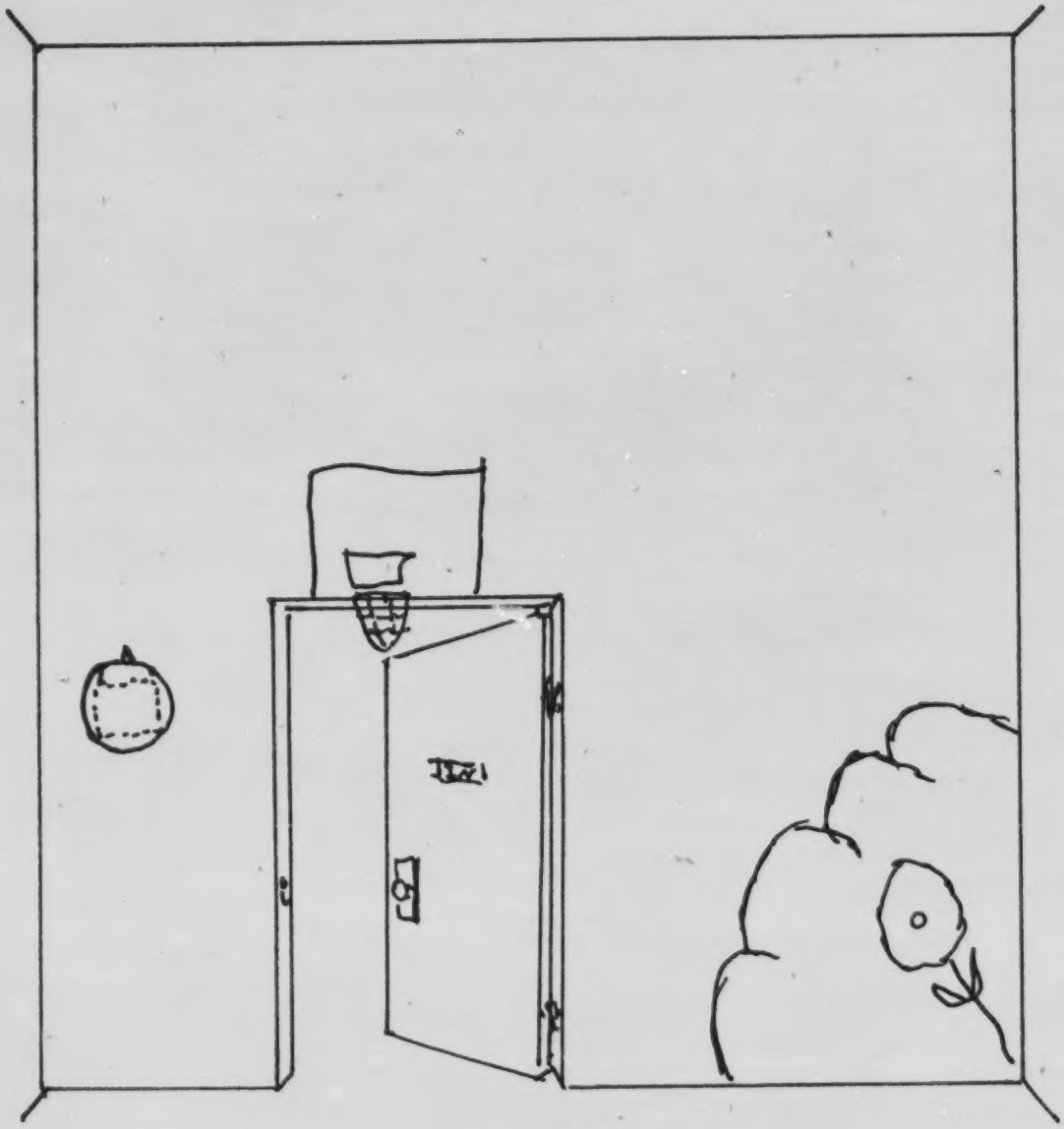
Age 13
Unacceptable (0 Points)



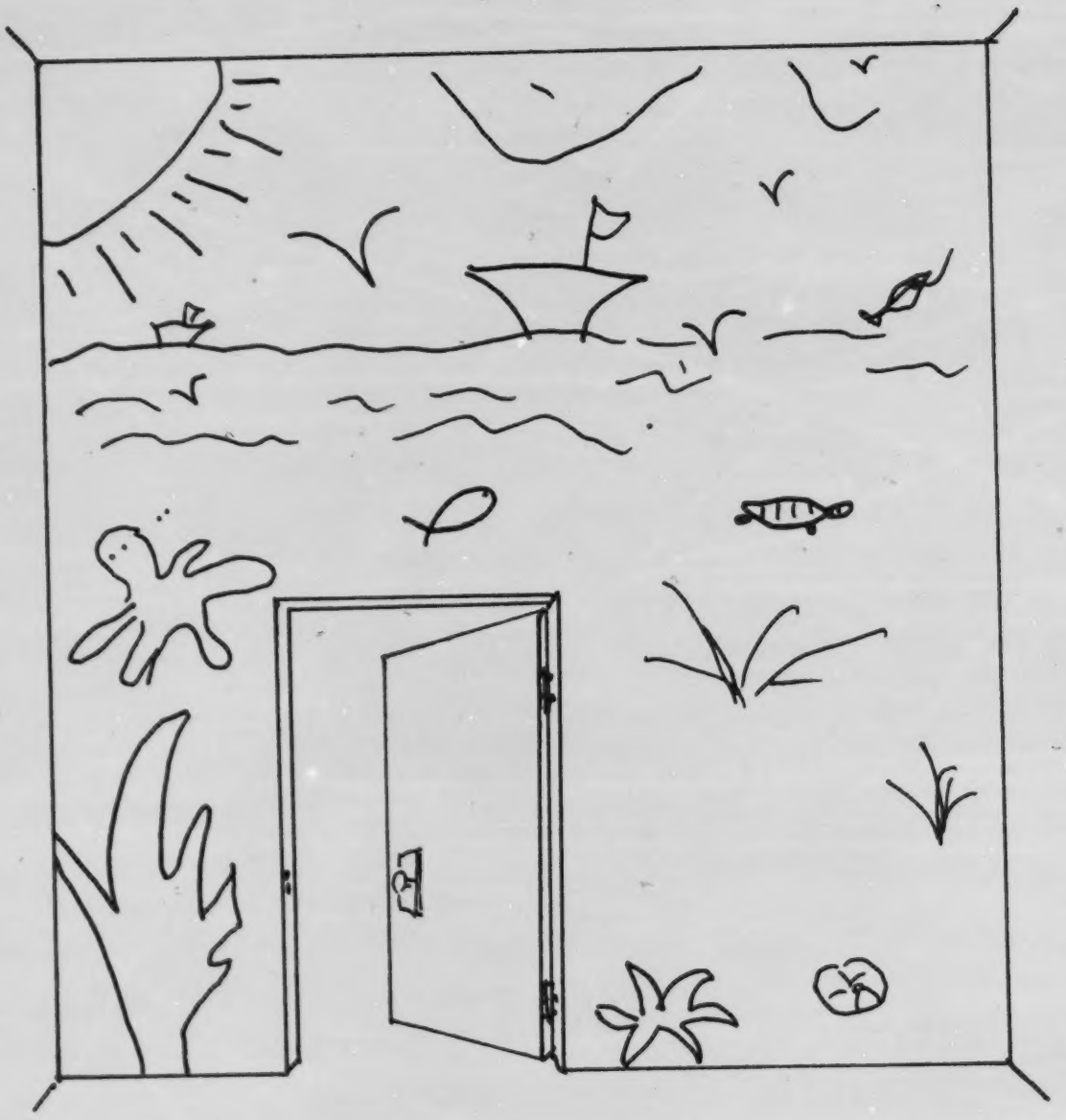
Age 13
Unacceptable (1 Point)

Age 13
Above Average (6 Points)

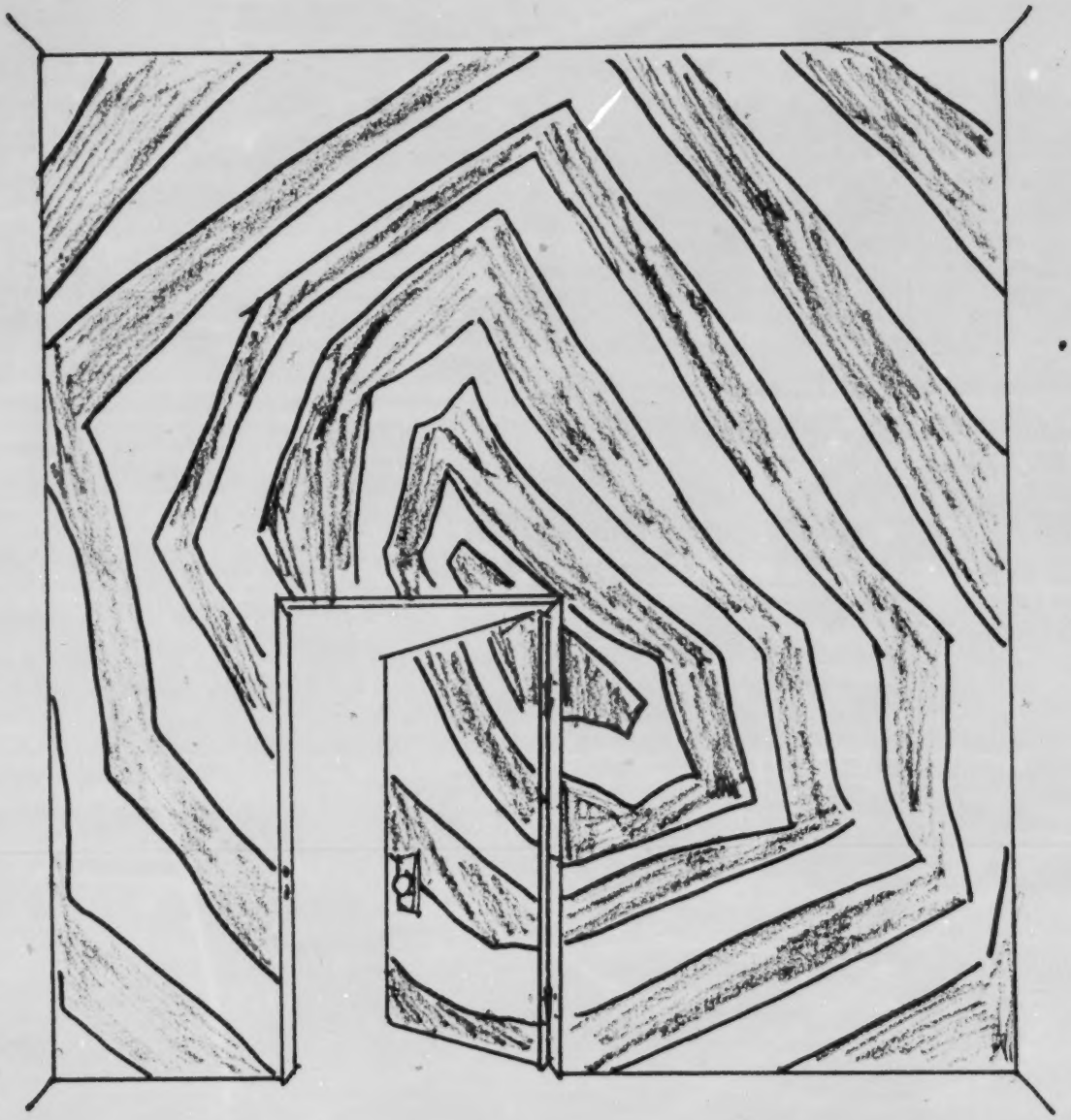
Age 17
Unacceptable (1 Point)



Age 17
Average (3 Points)



Age 17
Above Average (6 Points)



CHAPTER 3

USING SPATIAL CONCEPTIONS

Two drawing exercises involving the use of spatial conceptions are discussed in this chapter. In one, "Four People Seated at a Table," 9-, 13- and 17-year-old students were asked to complete the following task:

> *"Pretend you are standing at one end of a room and at the other end there is a square table with four people sitting at it. In the space on the next page draw the table and the people as you see them from your end of the room. Put one person at each side of the table."*

They were allowed approximately eight minutes to draw this picture.

This drawing task measured the ability of students to use perspective to represent a three-dimensional space on a two-dimensional plane. Three drawing techniques that help create this sense of space were used to judge the students' work. These are:

1. *Converging lines.* This accounts for the front edge of a table top being longer than the back edge, and table legs and chair legs being shorter in the back than in the front.

2. *Overlapping.* Figures or objects that cover one another promote the appearance of being closer or farther away.

3. *Distance.* Figures or objects higher on the picture plane (page) appear to be farther away from the viewer; those that are lower appear to be closer.

The drawings were further judged on the ability of students to follow directions. Measures of this included whether or not there were four figures at the table, the figures were seated, a figure was shown at each side and if the figures were complete.

In all, there were 14 characteristics for which students could receive points (see Illustration 2); in order for a drawing to be considered acceptable, any 7 of these characteristics had to be present. Students could receive a total of 12 possible points for their drawing.

ILLUSTRATION 2. Four People Seated at a Table, 14 Acceptable Scoring Characteristics

1. Table shown eye level or profile.
2. Table shown as a tilted plane.
3. Table top shown as a foreshortened, tilted plane.
4. Table legs shown foreshortened.
5. Chair legs shown foreshortened.
6. Four figures shown at the table.
7. Figures shown seated at the table.
8. A figure shown at each side of the table.
9. Figures shown complete.
10. Figures shown overlapping table.
11. Table shown overlapping figures.
12. Figures shown overlapping figures.
13. Distant figures shown higher.
14. Near figures shown lower.

The exercise demanded a high level of spatial visualization by the students. They had to visualize the drawing schematically before they could begin. Therefore, it was an extremely complex task.

Figure 5 provides the percentage of students

at each age acceptably completing the exercise. Twenty-three percent of the 9-year-olds, 42% of the 13-year-olds and 51% of the 17-year-olds received at least seven points for their drawings. Southeastern, black and inner-city students performed well below their peers at all three ages; suburban (high metropolitan) students scored consistently above the national population at each age (see Appendix A for data pertaining to these groups).

FIGURE 5. Percentage of Students With Acceptable Scores, Four People Seated at a Table: Ages 9, 13 and 17

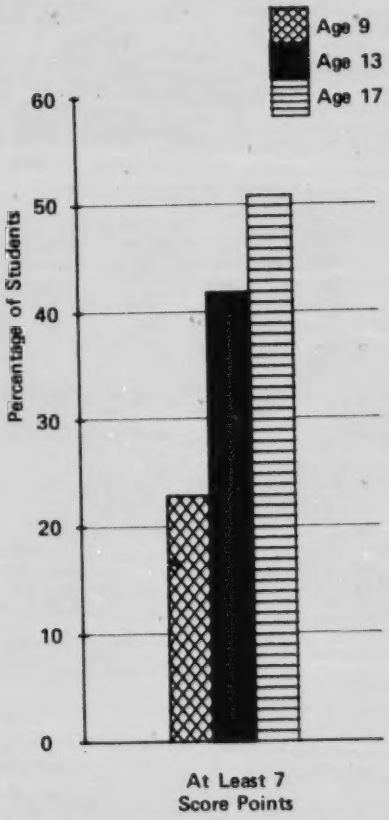


Figure 6 provides the percentage of student responses within each of the possible score points. The percentage of 9-year-olds dropped off dramatically after the level of seven score points. However, relatively large percentages of 13- and 17-year-olds scored above the minimal level of acceptability. Given the complexity of the task, the scores were surprisingly high.

Specific information about the various characteristics on which the drawings were judged is found in Figures 7 through 11 that follow. Descriptions of the various scoring characteristics are shown in the section that accompanies each figure.

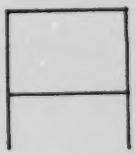
Description of Table-Top Perspective Categories

Tilted Plane, Showing Foreshortening

The top of the table is visible with near edge shown wider than the far edge so that the table appears to recede.

Tilted Plane, Not Showing Foreshortening

The four sides of the table are parallel or nearly parallel.



Eye Level/Profile View

Full table top is not shown, only the profile. If there is a tablecloth on the table, a bottom line for the cloth is taken as an indication that the table cannot be seen through it.

Bird's-Eye View

The table is drawn as though the viewer were at a point above the table center. A bird's-eye view is one in which the figures shown are consistent on each side of the table, that is, the figures radiate from the table or form a pattern around the table. If at least one figure is inconsistent (seen from the side) then the table is scored as a tilted plane.

Circular tables are scored only as bird's-eye views. If the top is shown as an oval however, it is foreshortened. Note that in such a case it cannot be a tilted plane, cannot show foreshortening.

Reversed Foreshortening

The table top is shown with reverse foreshortening so that the far edge is wider than the near edge.

Description of Table-Leg Perspective Categories

No Table Legs Shown

Table Legs Are Shown Foreshortened

The near table legs are drawn longer and lower and the far legs are drawn shorter and higher. Table top foreshortening is NOT necessary. Table pedestals are considered to be foreshortened. If the far table legs are hidden under the table but would be foreshortened if they had been shown, credit is given.

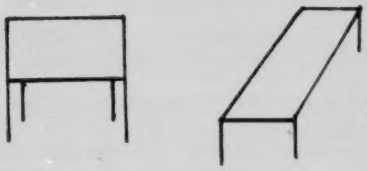
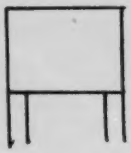
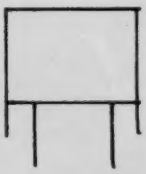


Table Legs Are Not Shown Foreshortened

The table legs have been drawn the same length or with far legs longer and lower than near legs, or with far legs longer and on the same level as near legs.



Legs the same length.



Far legs longer and lower than near legs.

Far legs longer and on the same level as near legs.

FIGURE 6. Percentage of Student Responses Within Each Possible Score Point, Four People Seated at a Table: Ages 9, 13 and 17

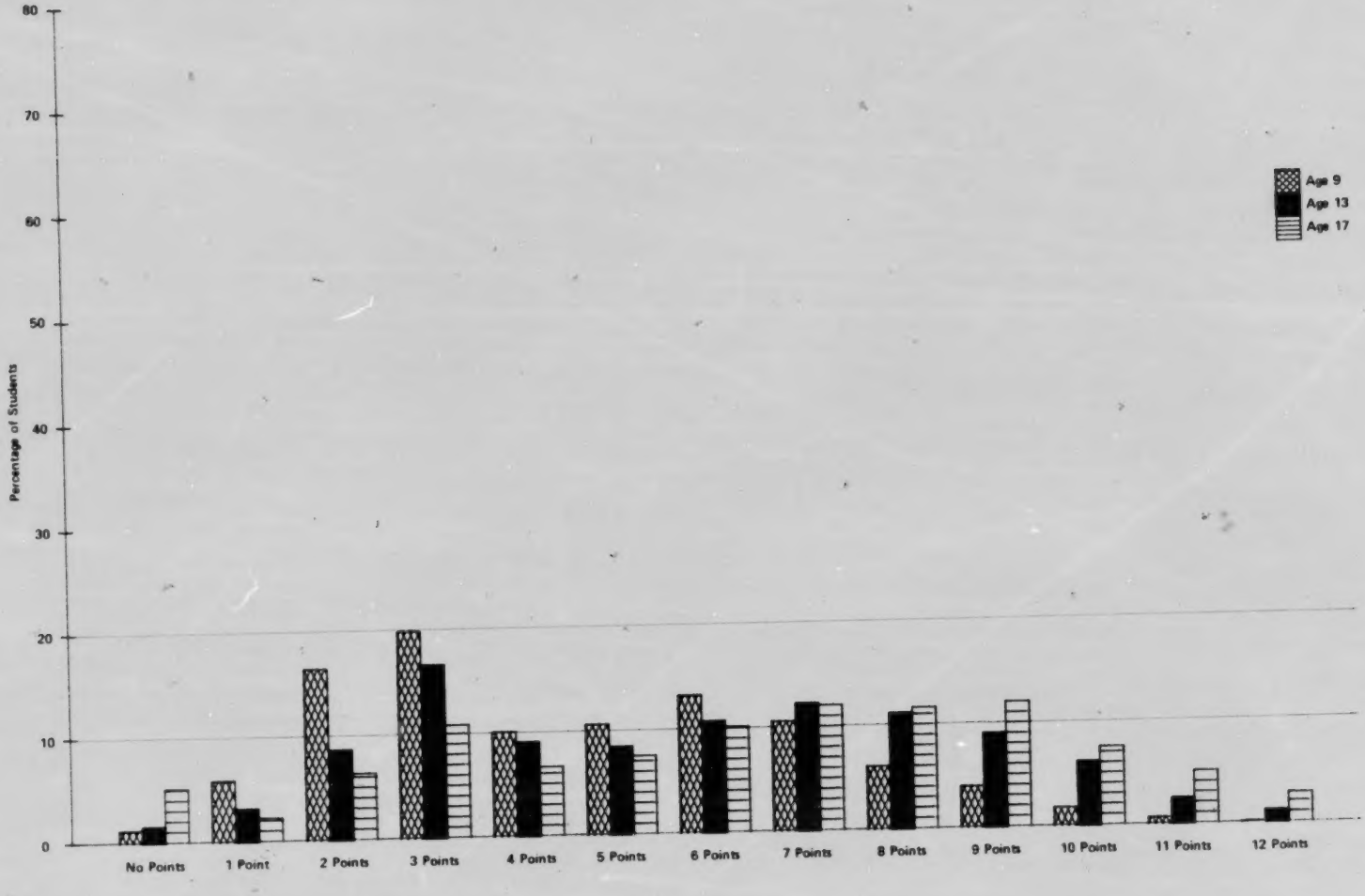


FIGURE 7. Percentage of Student Responses Within Each Table-Top Perspective Category, Table With Four People: Ages 9, 13 and 17

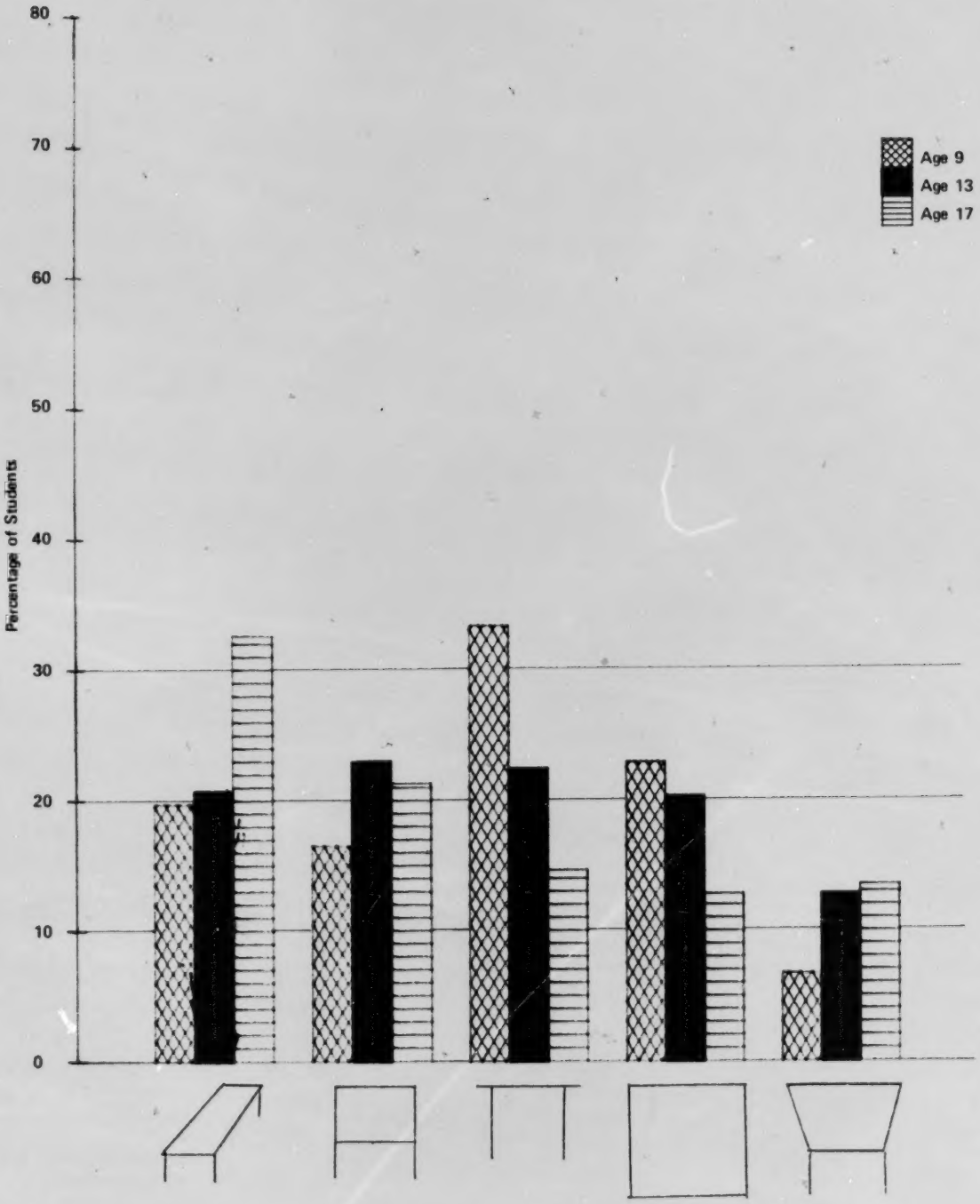


FIGURE 8. Percentage of Student Responses Within Each Table-Leg Perspective Category, Four People Seated at a Table: Ages 9, 13 and 17

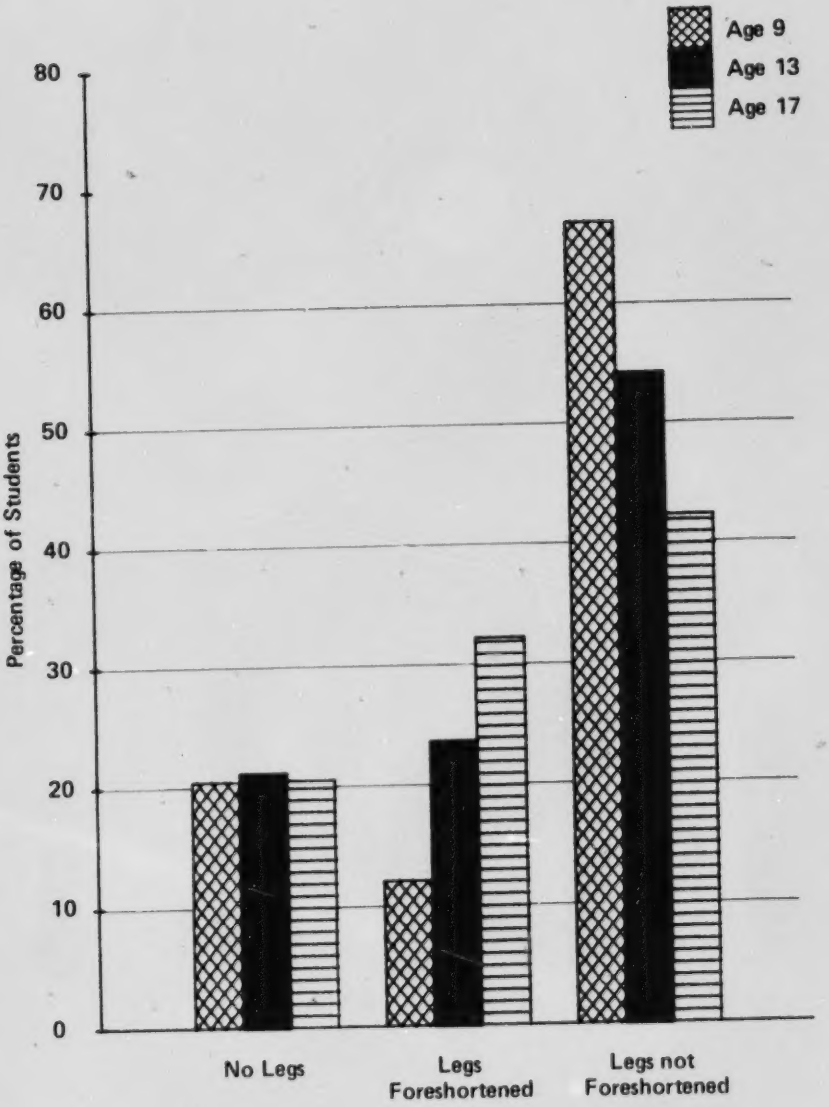
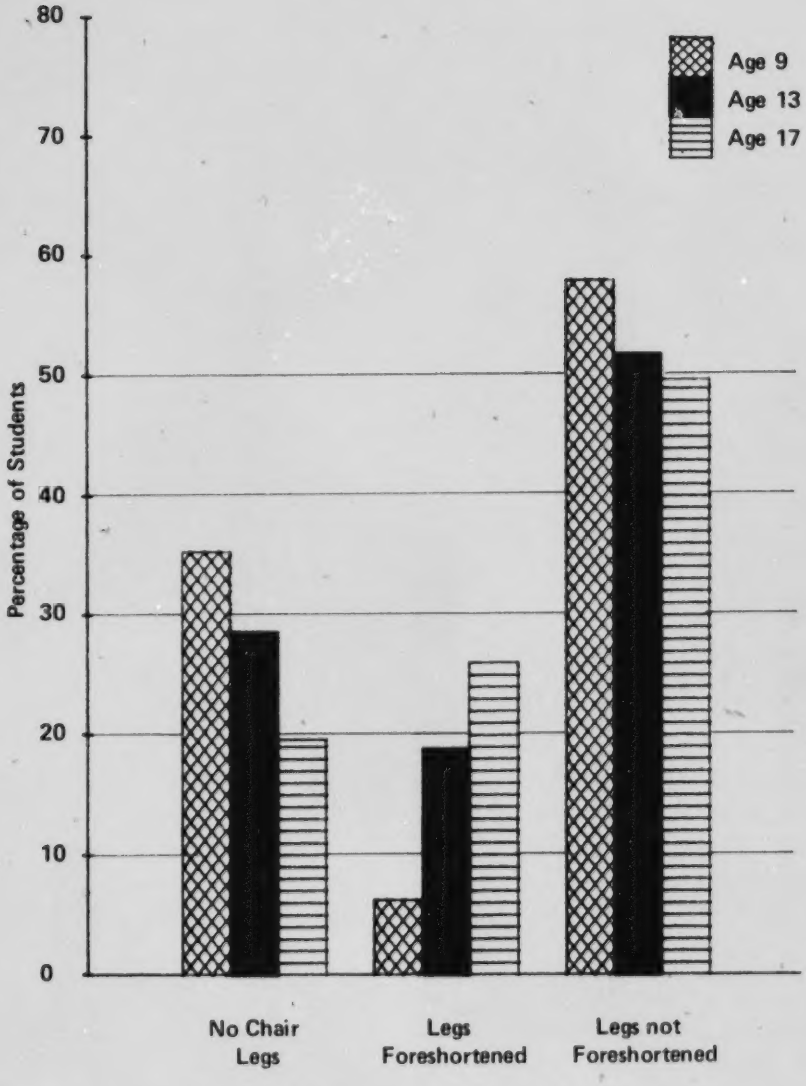
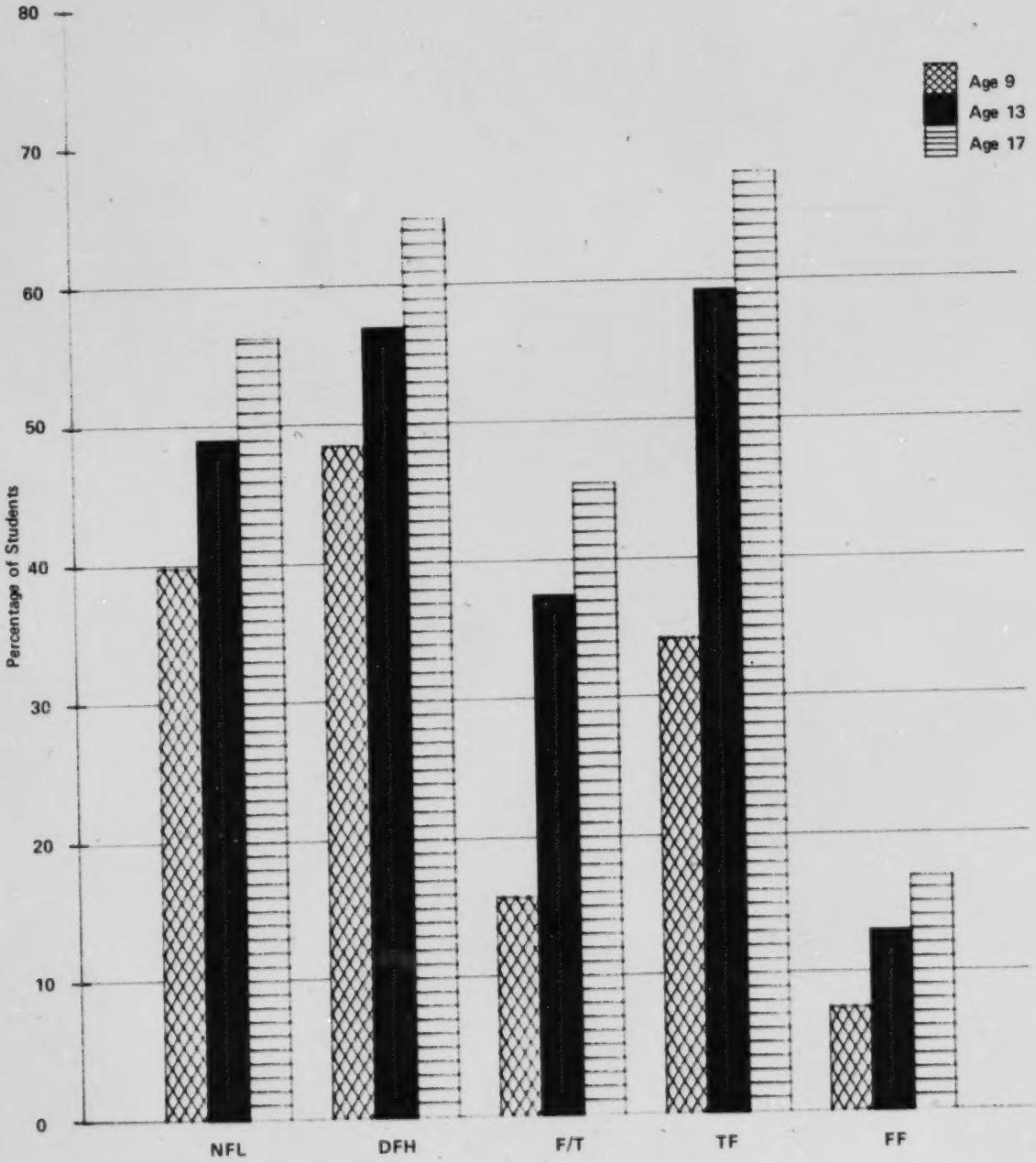


FIGURE 9. Percentage of Student Responses Within Each Chair-Leg Perspective Category, Four People Seated at a Table: Ages 9, 13 and 17 *



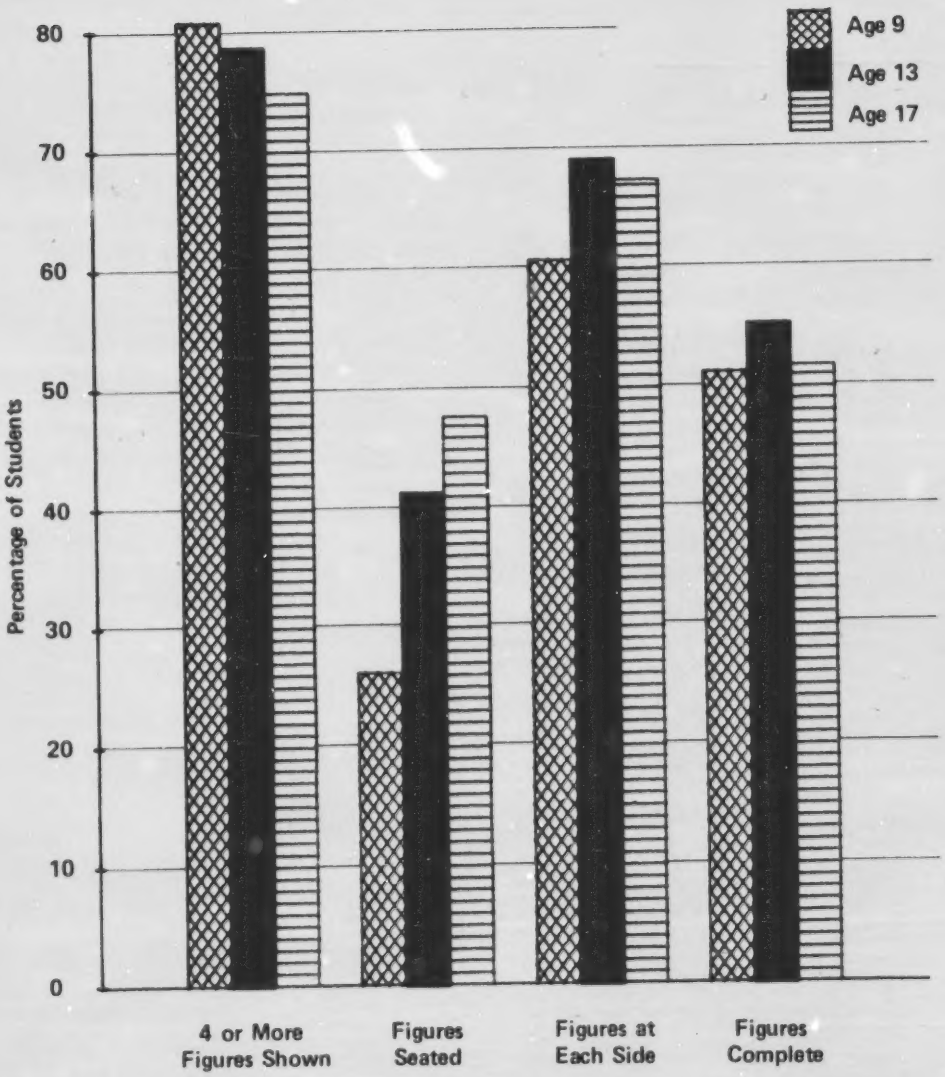
* *See description of Chair-Leg Perspective Categories on page 32.*

FIGURE 10. Percentage of Students Using Distance- and Overlap-Perspective Techniques, Four People Seated at a Table: Ages 9, 13 and 17 *



* See description of Distance- and Overlap-Perspective Categories on page 32.

FIGURE 11. Percentage of Students Following Exercise Instructions: Ages 9, 13 and 17 *



* See description of Instruction-Following Categories on page 32.

Description of Chair-Leg Perspective Categories

No Chair or Stool Legs Shown

Chair or Stool Legs Foreshortened

In instances where it is difficult to distinguish chair legs and a figure's legs, the drawing is scored either for chair legs or for figure completeness but not both.

The chair legs should be shown with near legs longer and lower than far legs. Credit is given if at least one chair is shown with these characteristics. Chair pedestals are considered foreshortened. Three-legged chairs receive credit for foreshortening if one leg is both higher and shorter than the other two legs.

Chair or Stool Legs Are Not Foreshortened

Description of Distance- and Overlap-Perspective Categories

Near Figure Lower (NFL)

Near figure is presented lower than the side figures, as determined by looking at the figure's feet rather than their heads. Credit is given even if there is only one side figure, if the near figure is clearly lower than the side figure and lower than where the other side figure would be if the drawing were finished.

Distant Figure Higher (DFH)

The far figure is presented higher than the side figures, determined by looking at the heads or feet (if visible) of the figures.

Figure Overlapping Table (F/T)

At least one portion of one figure overlaps (covers) the table. Instances such as a hand on top of the table in a profile view is NOT an overlap, nor is any instance where lines of one part continue through another part without any attempt to shade or erase.

Table Overlapping Figure (T/F)

Table overlaps the far figure or a portion of another figure. In profile views, if the far figure does not continue under the table, there is no overlap.

Figure Overlapping Figure (F/F)

One figure overlaps another. One part of a figure is represented as being in front of a portion of any other figure.

Description of Instruction-Following Categories

Number of Figures

Partial figures are counted but are not considered complete. Many drawings include the respondent as a view of the table scene, but that figure is not counted.

Figure Seated

Figures are shown seated. Figures to the left and right of the table must be seated, with

seats on or nearly on the chairs, upper legs parallel to the chair seat and legs bending at the knees. Figures must always be seated ON SOMETHING rather than floating.

If left or right, or even left *and* right figures are missing, credit is given if the figures shown are clearly seated.

If legs are bent, but other criteria are present, credit is given if the figure can be determined to be a child.

If the side figures are firmly seated but the table obscures their legs, credit is given.

Figures at Four Sides

One figure at each side. The figures must be placed at the table sides and NOT at the corners. There should be at least one figure per side.

Figures Completeness

Figures shown are complete. Parts of figures (arms, legs) are shown where they would be expected to be. If figure parts are obscured by a tablecloth or some other object, credit is given. As many figures as are drawn are scored. It is not necessary to have four figures.

* * *

The information provided in the detailed descriptions of the various perspective characteristics suggest that the use of more complex perspective techniques do develop at certain ages. A noticeable increase in the ability of students to draw the table top as a tilted plane occurs between the ages of 13 and 17. The use of table- and chair-leg foreshortening techniques shows its greatest increase by age 13, although it improves through age 17 as well. The use of distance techniques is established by age 9 but continually increases. Overlapping techniques are well in use by age 13.

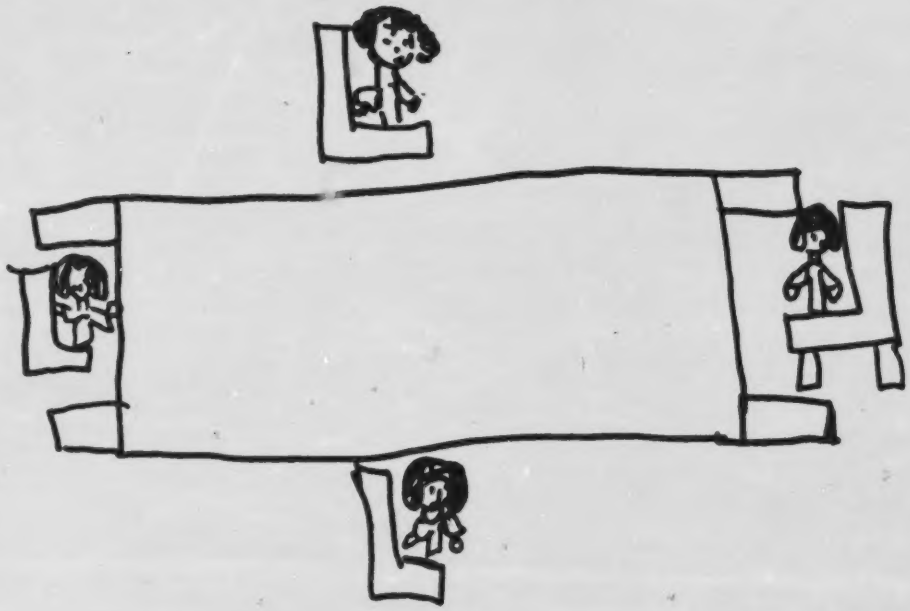
The percentages of students following instructions were not appreciably different at the three age levels, except for the category "figures seated." However, this difference can probably be attributed to the difficulty in drawing a seated figure at a table. The fact that so many students did so at all is noteworthy.

* * *

Examples showing the range of student abilities for this exercise follow. They are categorized as unacceptable (less than 7 points), average (7 through 9 points) and above average (10 through 12 points).

Age 9
Unacceptable (4 Points)

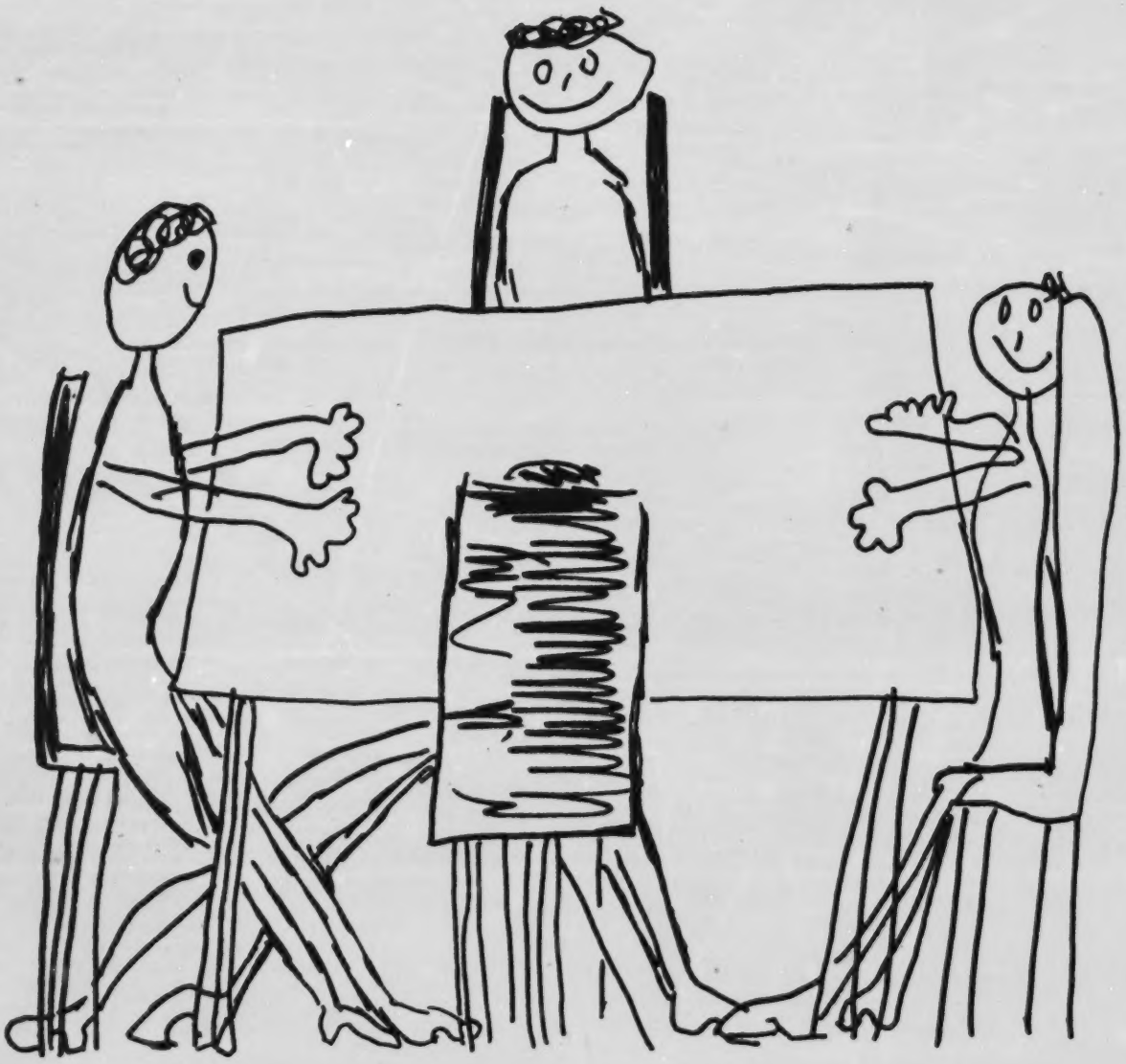
Age 9
Unacceptable (5 Points)



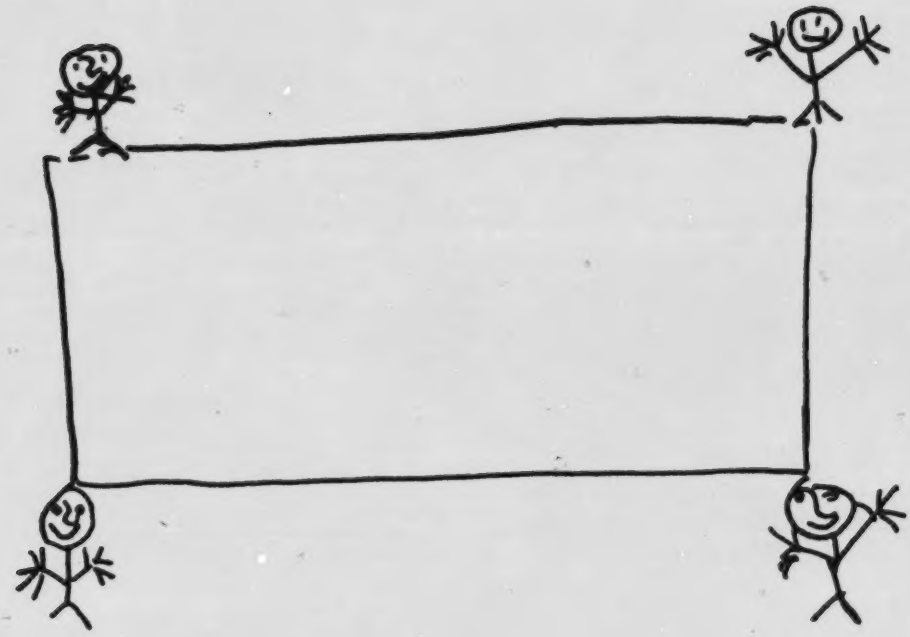
45

Age 9
Average (8 Points)

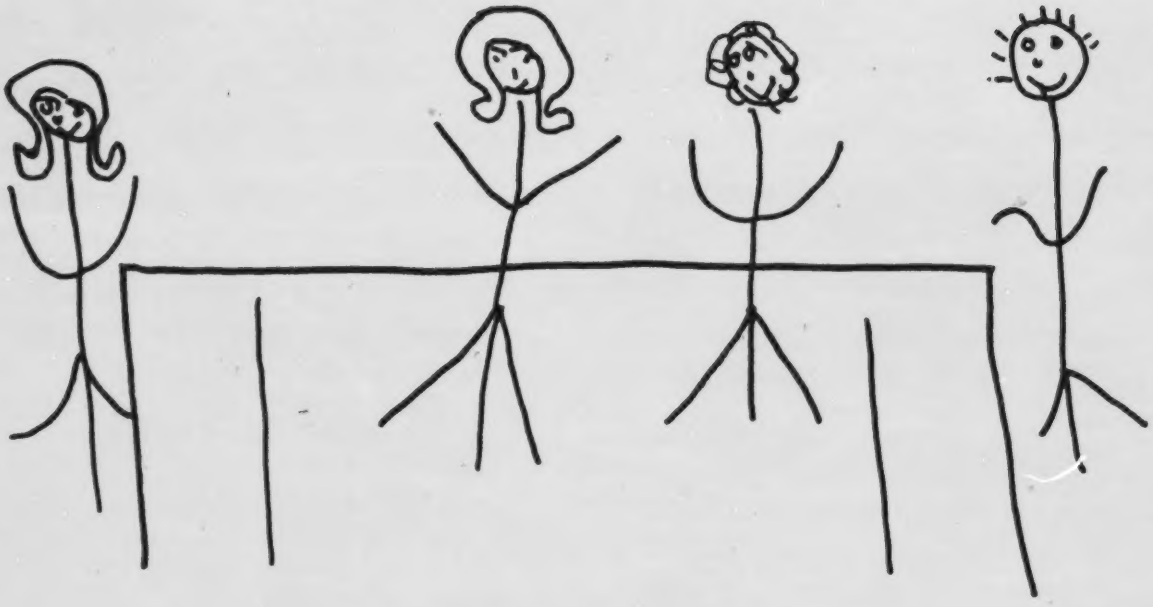
Age 9
Above Average (10 Points)



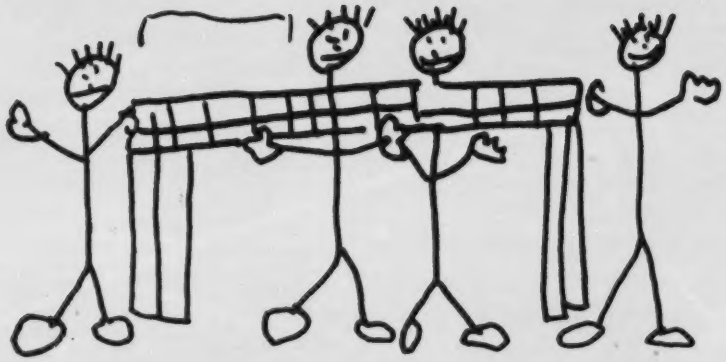
Age 13
Unacceptable (2 Points)



Age 13
Unacceptable (4 Points)



Age 13
Unacceptable (5 Points)

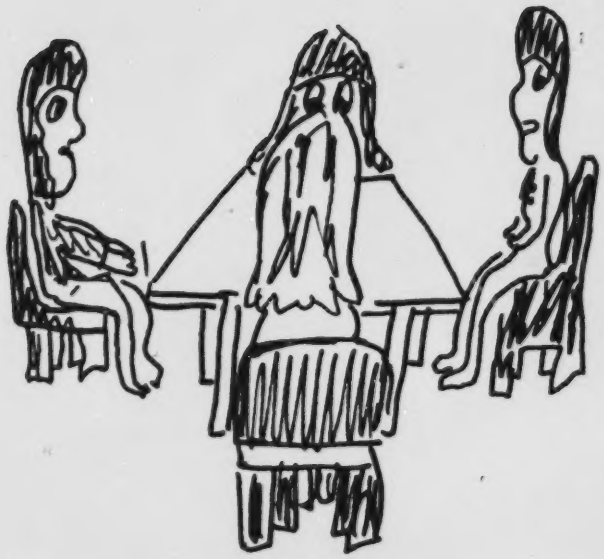


Age 13
Average (8 Points)

Age 13
Average (9 Points)

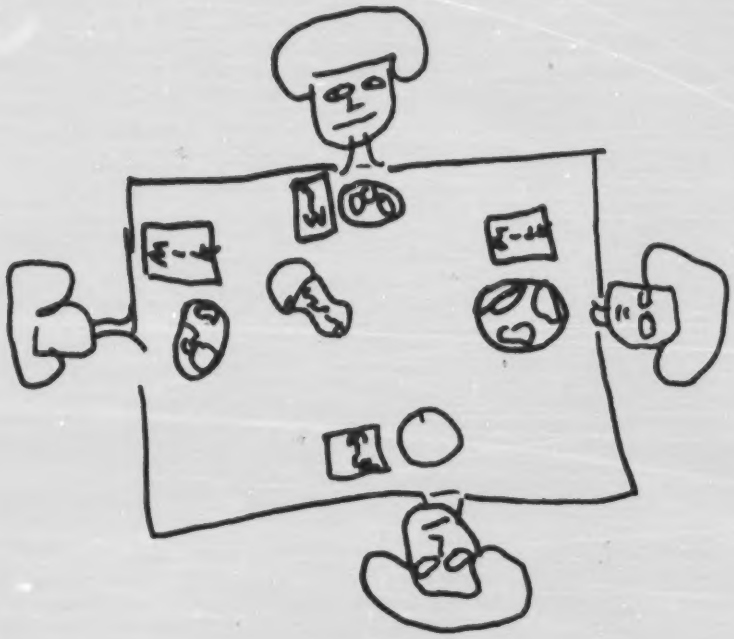
52

Age 13
Above Average (12 Points)



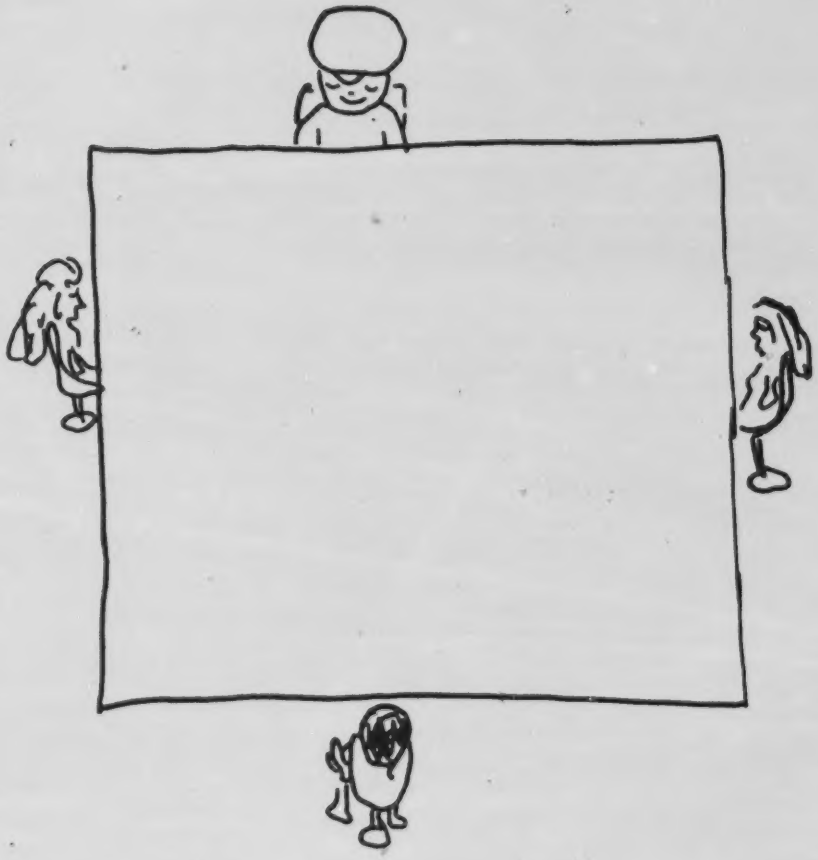
Age 17
Unacceptable (1 Point)

Age 17
Unacceptable (3 Points)



Age 17
Unacceptable (4 Points)

Age 17
Average (8 Points)



57

Age 17
Above Average (11 Points)

Age 17
Above Average (12 Points)

In another far less complicated item, 9-year-olds were asked to do a pencil drawing based on the following instructions:

> *"In the space on the next page, draw three children on a playground. Make one child look very close to you. Make the second child look quite far from you. Make the third child look very, very far from you."*

The children had about seven minutes to complete the task.

The basic objective of this exercise was to measure whether or not 9-year-olds could produce drawings that successfully portrayed depth and distance. An acceptable response had to include at least three figures that were each progressively higher than the preceding figure and each appropriately smaller as well (see the section earlier in this chapter, "Four People Seated at a Table, Acceptable Scoring Characteristics," for definitions of these categories as well as others used to judge this drawing exercise).

Approximately 43% of the 9-year-olds successfully met these criteria. The performance levels of Southeastern, black and inner-city (low metropolitan) children are well below the national population of 9-year-olds (see Appendix A for these data).

Definitions of Perspective Categories

To be counted as a figure, there had to be a head, neck and some indication of shoulder or collar drawn.

Distance

Figures had to be one-fourth inch higher than each preceding figure for all drawings that were several inches tall. When very small figures (under 1") were drawn, the proportional relationships changed and this was taken into account. Higher was also considered to mean higher on the ground plane established by the picture, rather than the plane established by the page. Credit was given in instances where a low eye-level view of figures was drawn, despite a single ground line.

Size

Figures had to be one-fourth inch different in size to be considered smaller. Proportional relationships for very small figures were considered as well. Credit was given when three figures were drawn radically different in size but all on the same ground line, creating a successful illusion of distance, and when unusual ground lines were drawn to create different spatial relationships.

Figure Overlapping Figure

A part of one figure is presented in such a way that it covers a part of another figure.

Figure Overlapping Object

Figures overlap objects when they cover a portion of an object. When a complete ground or horizon line is drawn and a figure is shown standing on the ground below that line, the figure overlaps an object. Stick figures overlap the object ONLY if it is clear that the figure is in front of the object.

Objects Present

Objects counted included: toys, grass, trees, playground equipment and ground, when it has been established by the clear presence of a complete horizon line drawn from one side of the drawing space to the other. Multiple horizon lines indicate multiple objects if each line is drawn from one side of the page to the other.

Point Perspective

Point perspective is shown in the objects if the objects appear to recede into the distance.

Some evidence of converging lines in two separate instances is necessary in ambiguous cases.

* * *

Although the drawings were judged on the use of objects, overlap techniques and for point-perspective techniques as well, these dimensions were not used to establish acceptability. Nevertheless, they do provide further information on the percentage of 9-year-olds able to portray perspective and follow instructions. Figure 12 shows the results for all the categories.

The percentage of 9-year-olds using the several perspective techniques varies considerably. While 78% draw figures progressively higher, less than half (45%) draw figures progressively smaller; and even fewer use overlap or point perspective as techniques. Among the subpopulations measured, black and inner-city 9-year-olds consistently use these techniques less frequently than the total population of 9-year-olds (see Appendix A for these data).

Acceptable examples of children's drawings showing these various techniques follow:

Objects present.

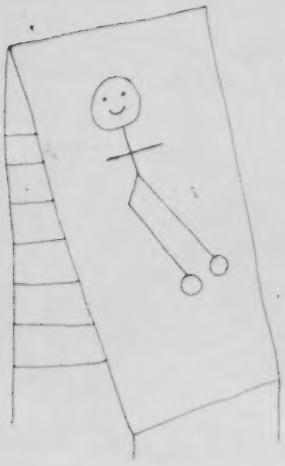
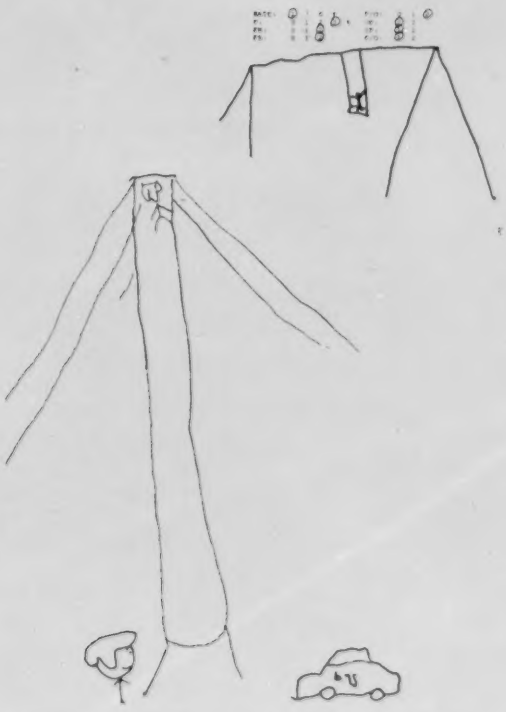
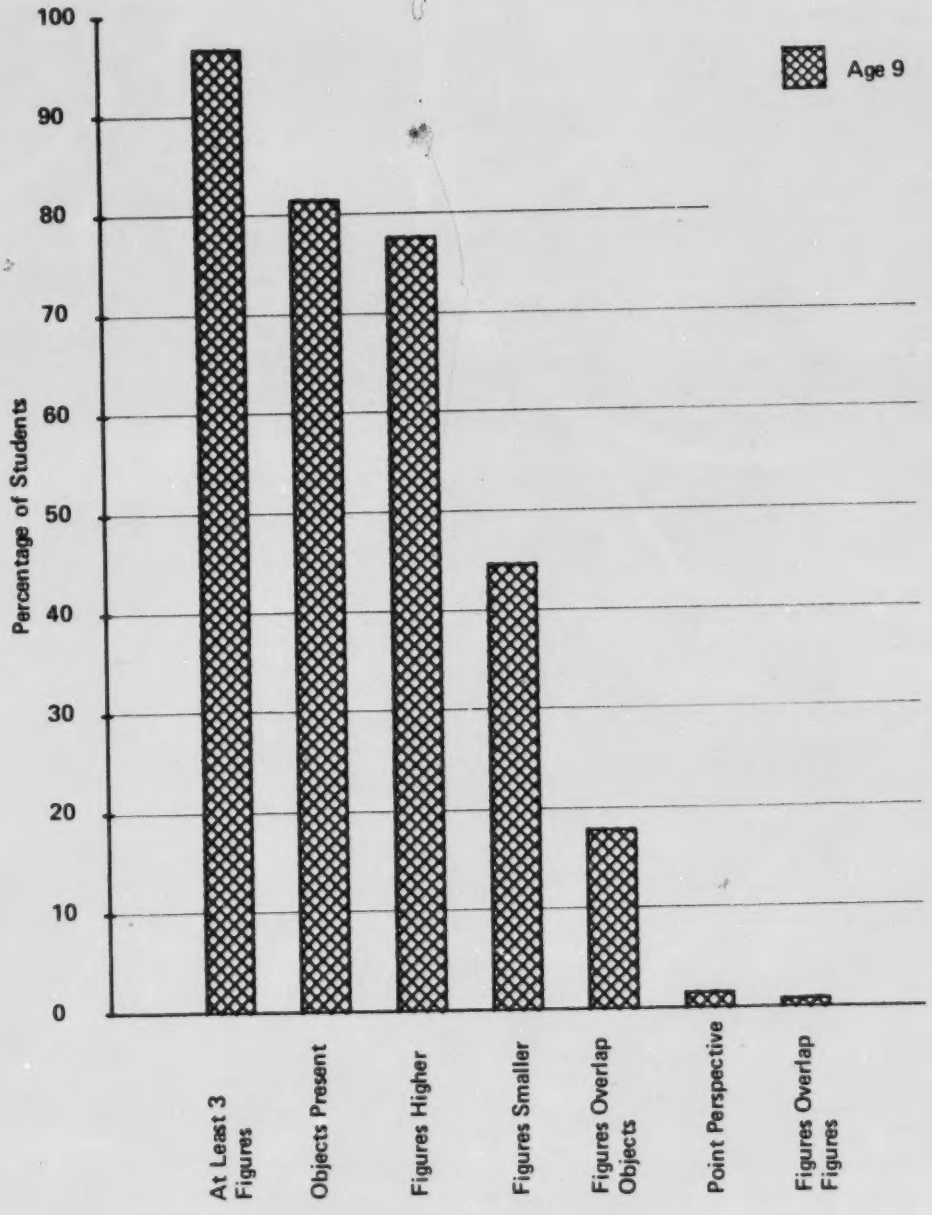


Figure overlapping object.



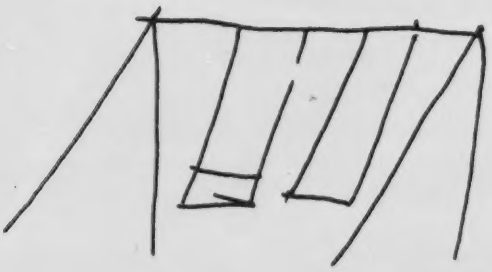
Point perspective attempted.

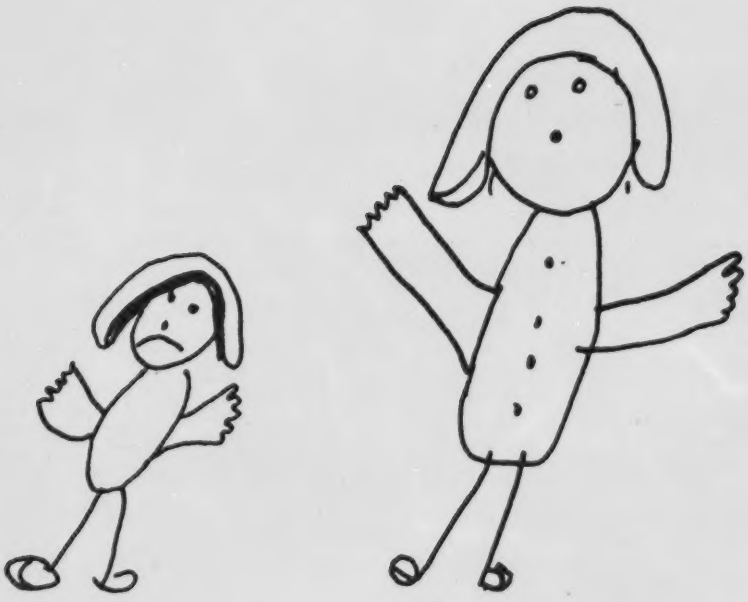
FIGURE 12. Percentage of 9-Year-Olds Using Each Drawing Characteristic: Children on a Playground



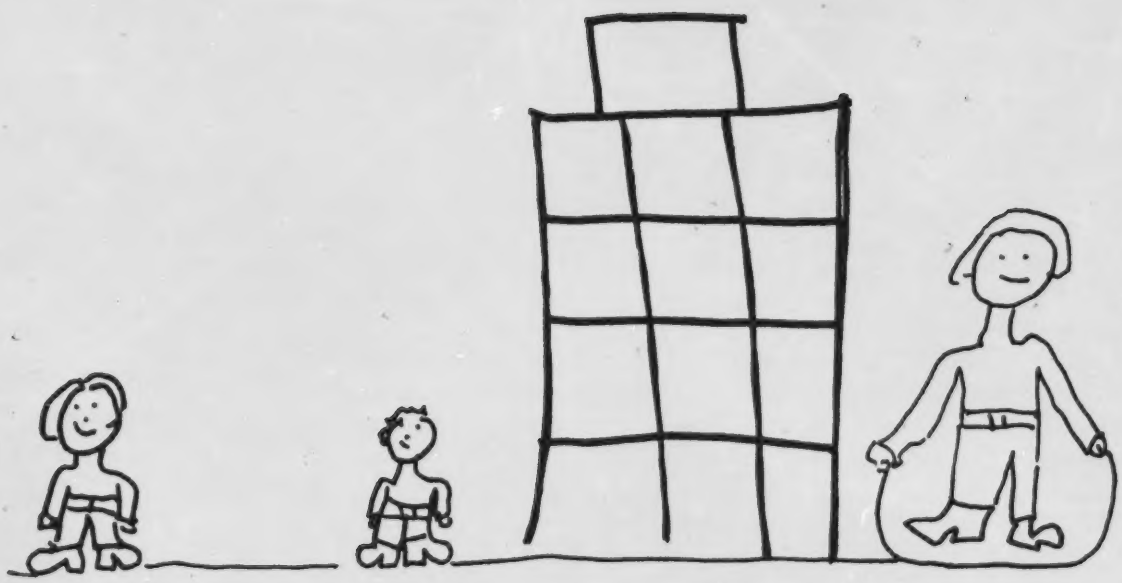
The range of perspective-drawing skills exhibited by 9-year-olds are shown in the following examples. The drawings were categorized as either unacceptable (less than five points) or acceptable (five or more points).

Age 9
Unacceptable (0 Points)

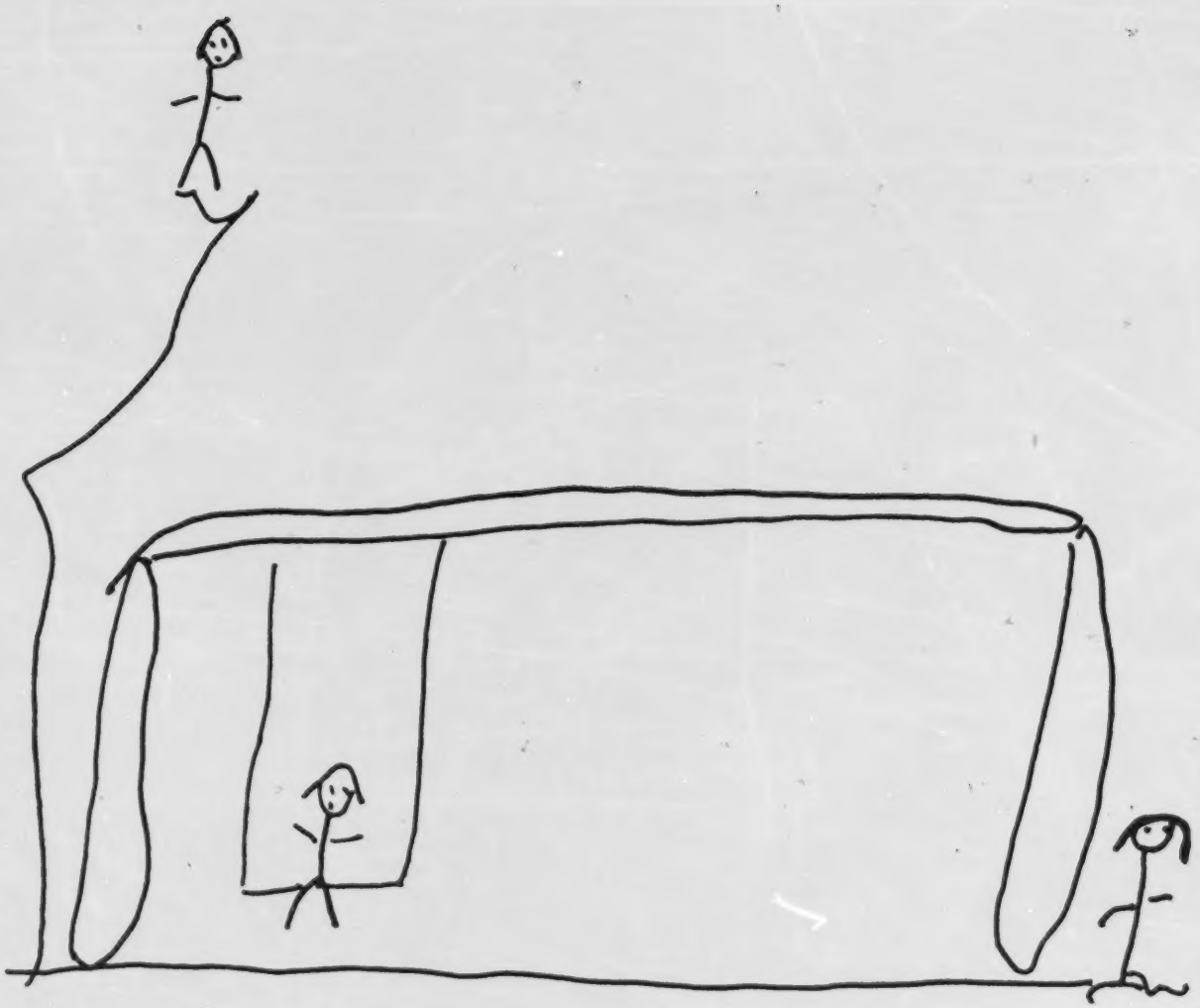




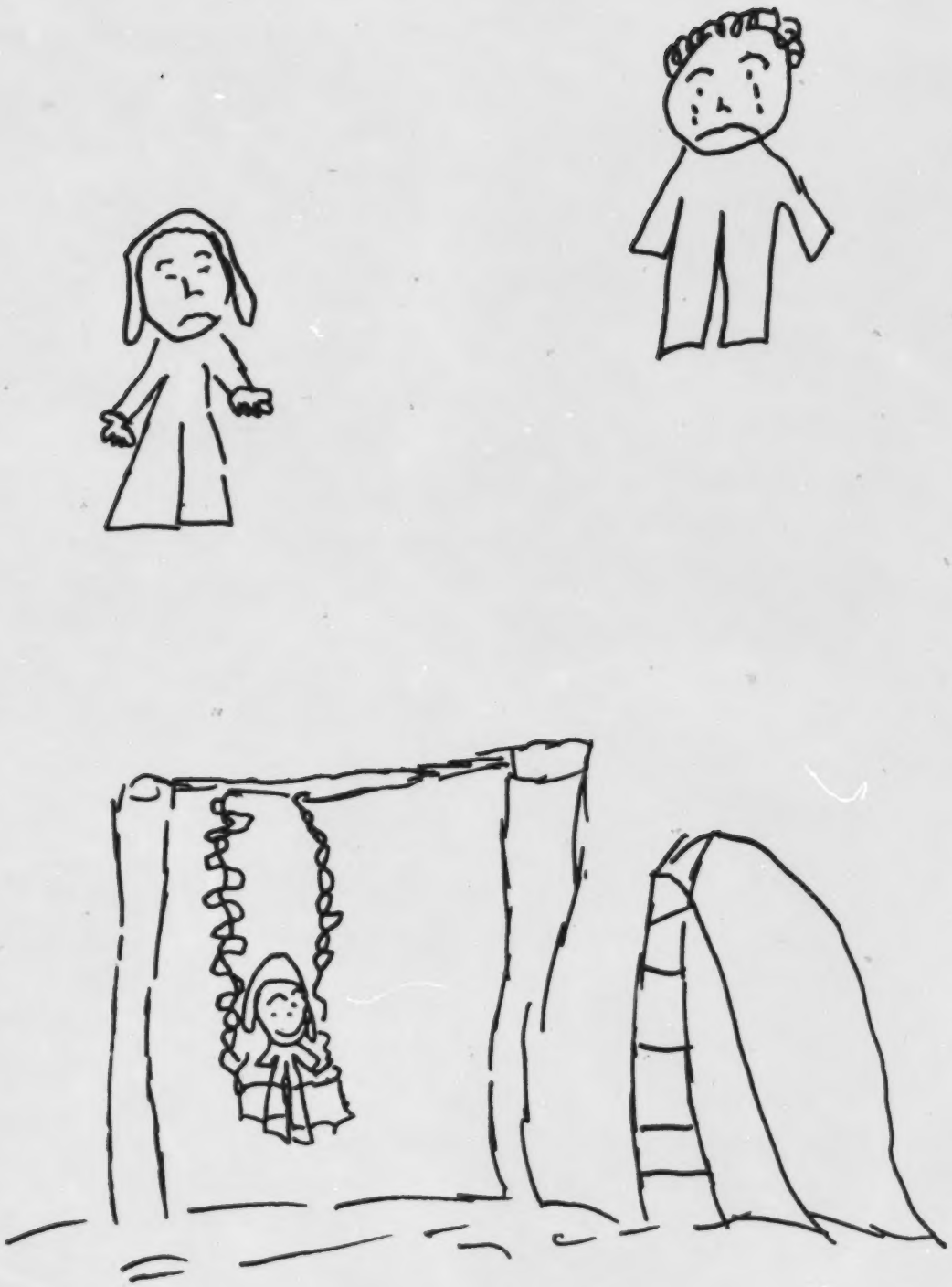
Age 9
Unacceptable (1 Point)



Age 9
Unacceptable (2 Points)

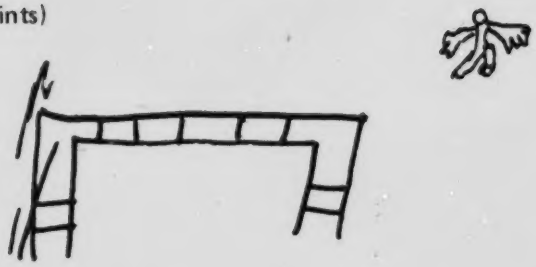


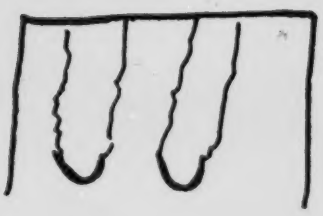
Age 9
Unacceptable (3 Points)



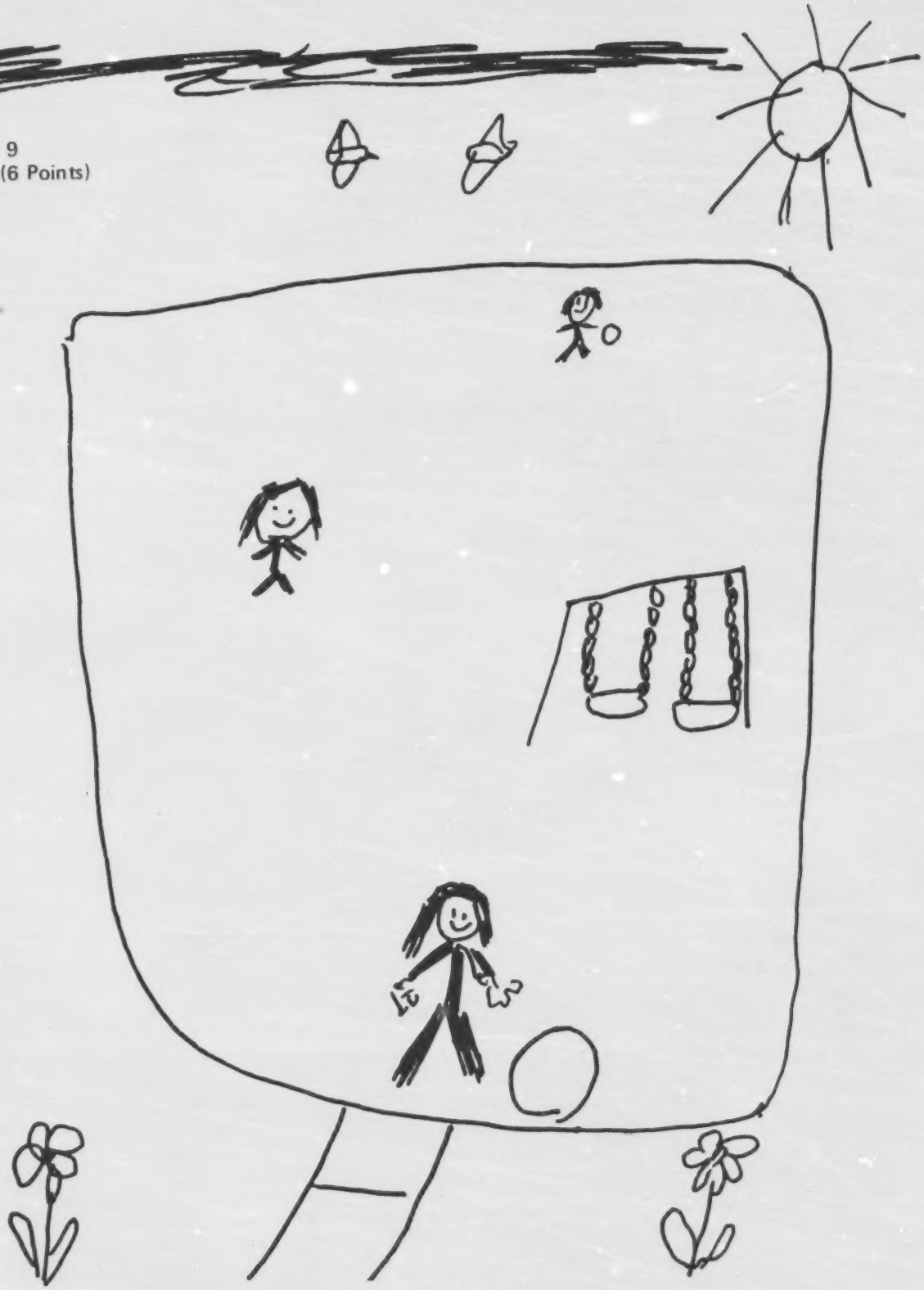
Age 9
Unacceptable (4 Points)

Age 9
Acceptable (5 Points)





Age 9
Acceptable (6 Points)



59

Age 9
Acceptable (6 Points)

70

Age 9
Acceptable (7 Points)

61

CHAPTER 4

SHOWING MOTION

In one exercise, 9- and 13-year-olds were asked to show motion using various parts of the human anatomy (legs, arms and/or body) or by means of various expressive devices such as flying hair, a falling hat, both feet clearly off the ground, words in bubbles referring to running, movement lines and so on. The exercise asked them to: "Draw a person who is running very fast. In the space on the next page, make the best drawing you can."

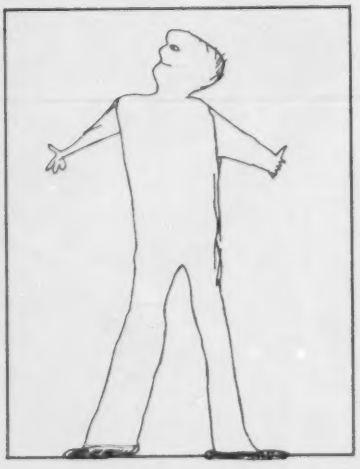
Overall acceptable performance of the students on this exercise was based on the attainment of five points. Points were defined by the representations in the following section.

Representations of Running Used in Total Point System

LEGS

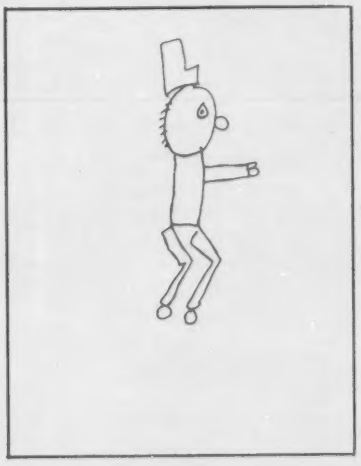
Legs straight, parallel, without motion.

0 Points



Legs differentiated, scissors position, unbent.

1 Point



Both legs and parallel as in jumping.

2 Points

Both legs bent and lower legs not parallel.

3 Points

Both legs bent with one upper leg forward/one back.

4 Points

ARMS

Arms parallel to the body or limp.

0 Points

Arm(s) unbent but extending from the body.

1 Point

Arms bent and parallel.

1 Point

Both arms bent with one in a forward position and one in a backward position.

2 Points

BODY

Body perpendicular to ground.

0 Points

Body clearly leaning in the direction of motion.

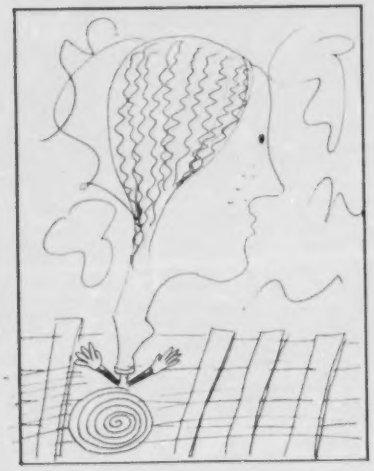
2 Points

2 Points

DEVICES

One device	1 point
Two devices	2 points
Three devices	3 points

Examples:



This example contains two devices: one for the speed lines and one for representing the legs as a spiral.

2 Points

This example contains three devices: one for the dog chasing the figure, one for the speed lines and one for the word help.

3 Points

This example contains two devices: one for showing the figure to have almost run from the picture and the other for the lines representing either speed or where the figure has been.

2 Points

This example contains one device for the figure clearly running off the ground.

1 Point

This example contains one device for the small animal chasing the figure.

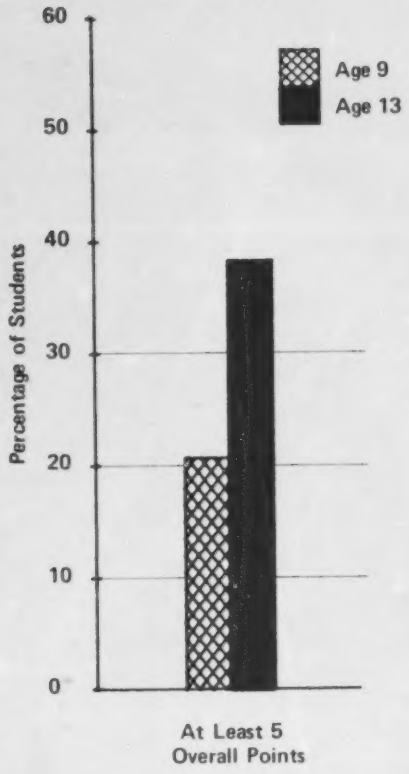
1 Point

This example contains one device for the flowing hair.

1 Point

Figure 13 provides the percentages of 9- and 13-year-olds with at least five overall points, giving them an acceptable score.

Figure 13. Percentage of Students With Acceptable Scores, Running Person: Ages 9 and 13



Although the percentages were low at both ages, almost twice as many 13-year-olds (38%) were able to successfully draw a running person as 9-year-olds (21%). Performance at both age levels in the Southeast, among blacks and low-metropolitan students was substantially below that of their age peers (see Appendix A for these data).

Figures 14 through 17 provide further data on the various categories used to judge the drawings.

The data found in Figures 14 through 17 suggest that:

1. Most 9-year-olds tend to draw running legs differentiated but in a scissor fashion. By age 13, students have learned to bend the legs in their drawings. However, the majority of students do not draw legs in a running position.

2. The large majority of both 9- and 13-year-olds draw arms as bent or extended from the body while running, but tend to put them parallel or at least in the same direction.

3. There are virtually no differences between the ways 9- and 13-year-olds draw the body of a running person. The majority of students simply show the body as erect.

4. Thirteen-year-olds consistently use more devices to express motion than 9-year-olds.

In general, the 13-year-olds show greater ability to be flexible with the figure and to express themselves symbolically by using various devices.

FIGURE 14. Percentage of Students Showing Motion With Legs, Running Person: Ages 9 and 13

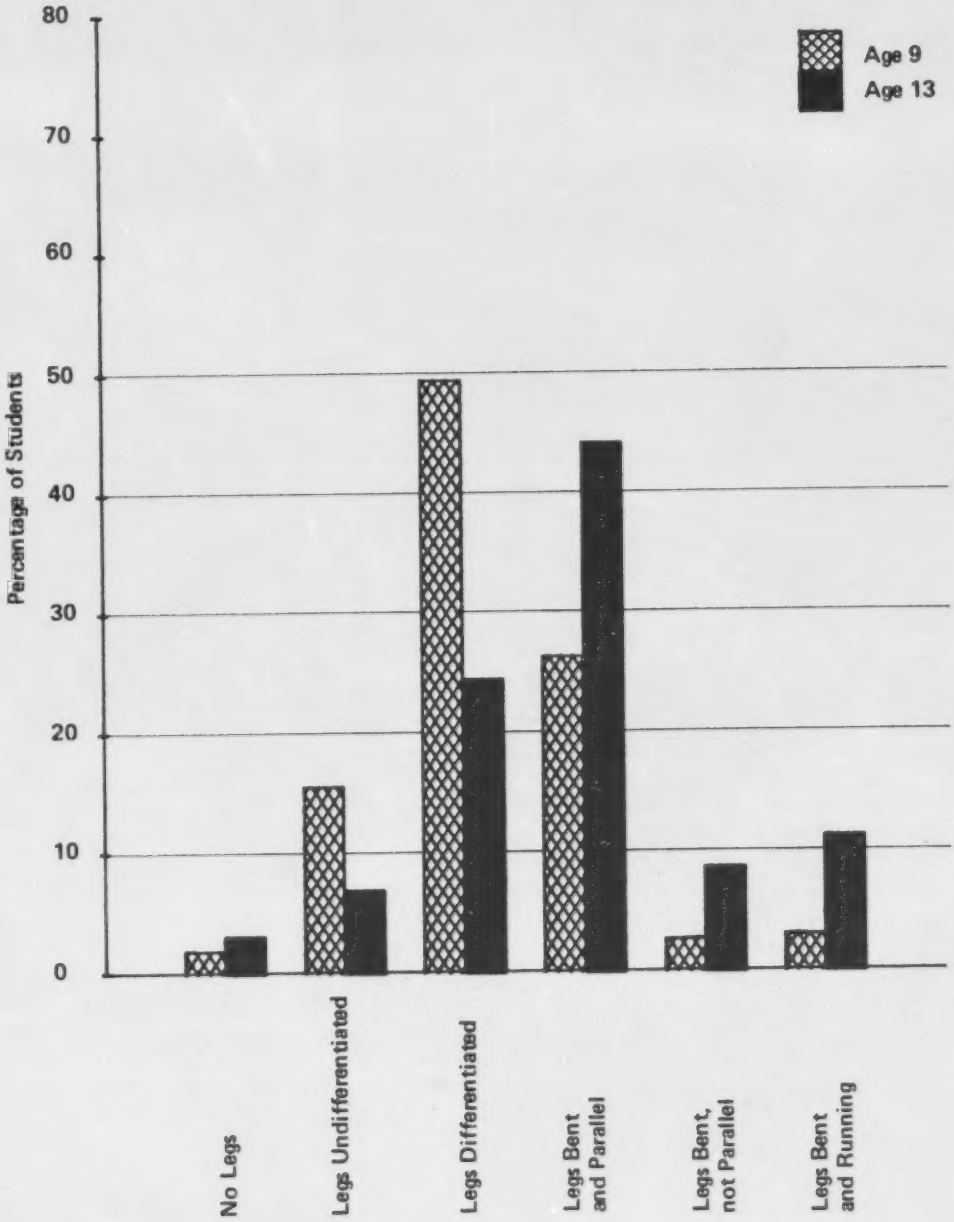


FIGURE 15. Percentage of Students Showing Motion With Arms, Running Person: Ages 9 and 13

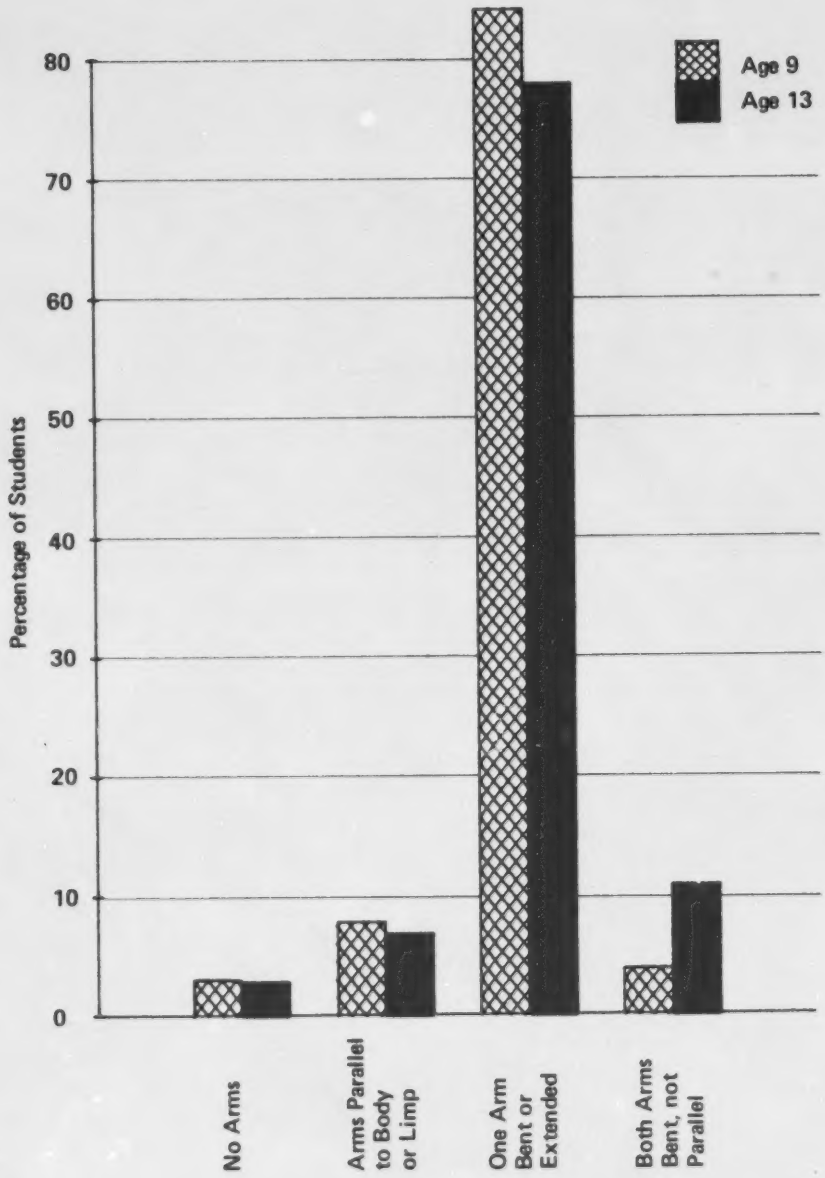


FIGURE 16. Percentage of Students Showing Motion With the Body, Running Person: Ages 9 and 13

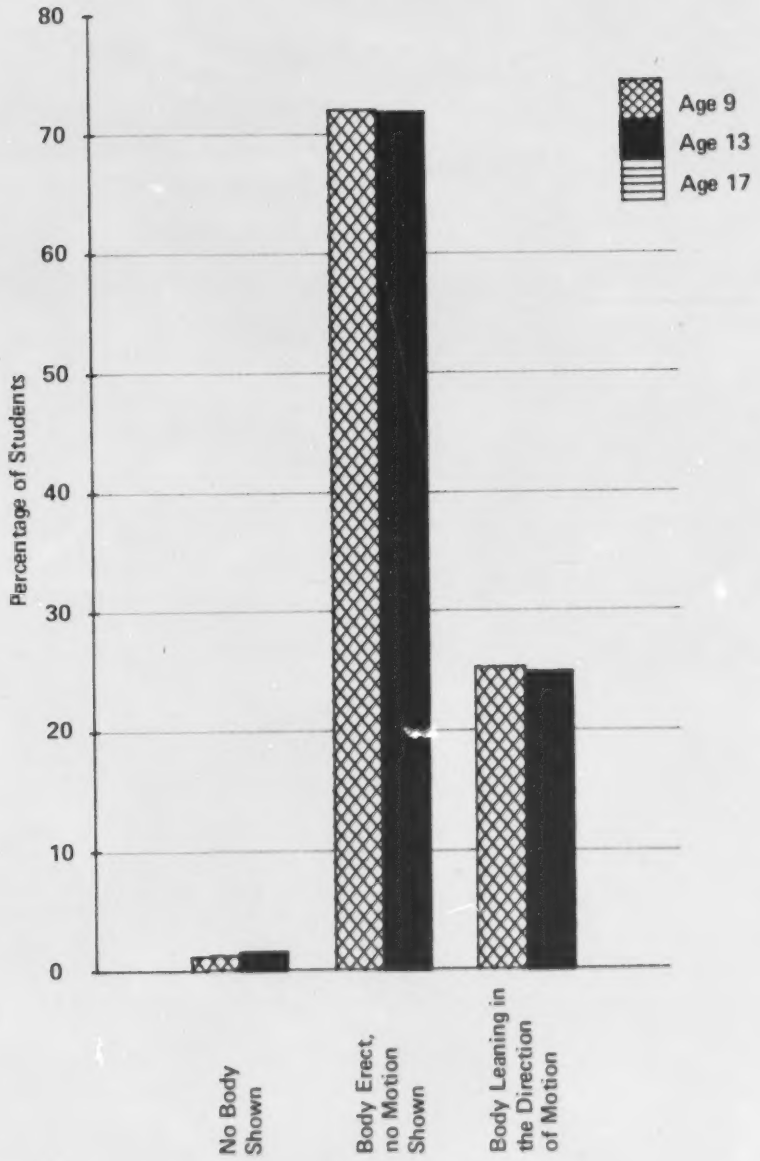
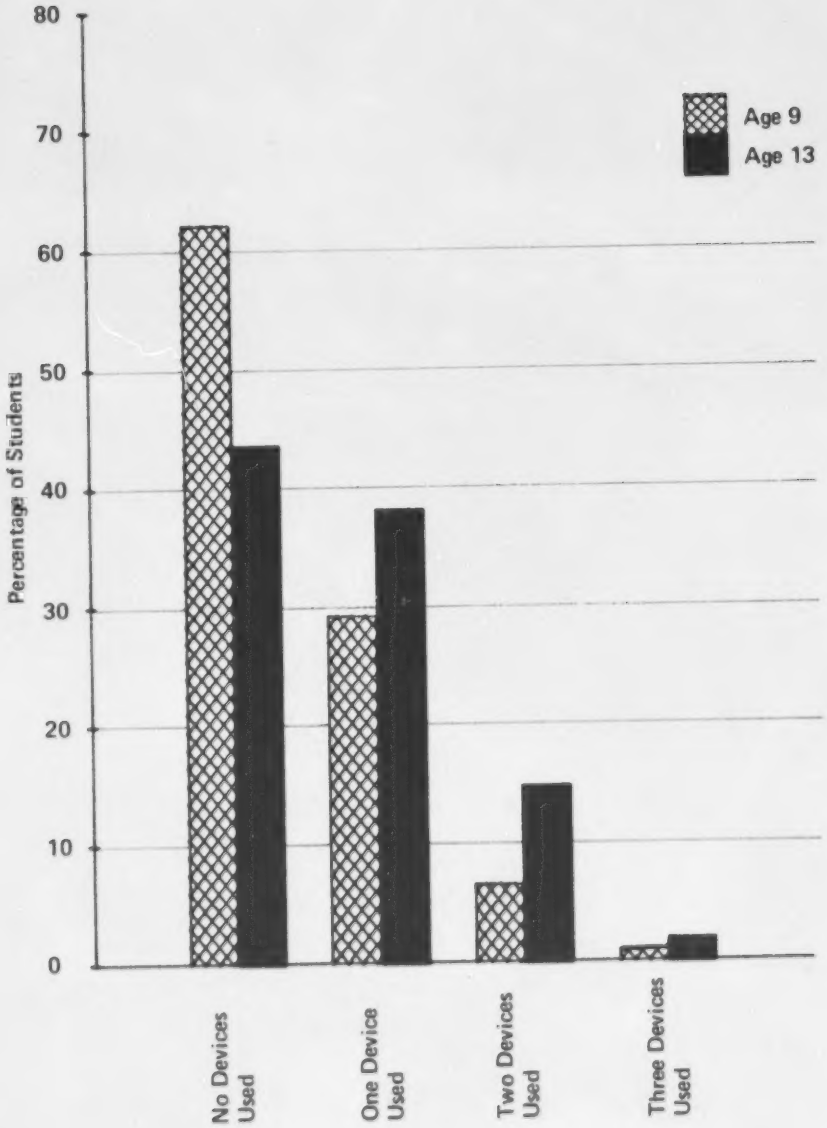


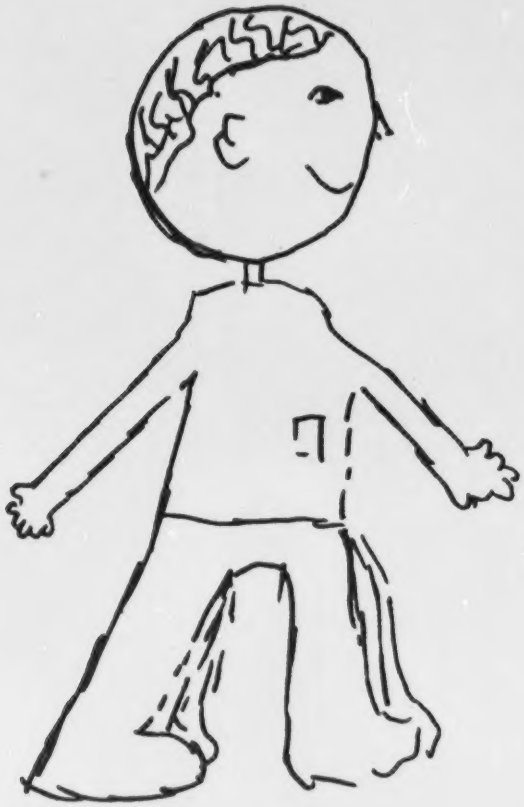
FIGURE 17. Percentage of Students Showing Motion With Expressive Devices, Running Person: Ages 9 and 13



A range of drawing skills for both 9- and 13-year-olds is shown in the following examples. They are categorized as unacceptable (less than five points) and acceptable (five or more points).

Age 9
Unacceptable (1 Point)

Age 9
Unacceptable (3 Points)



Age 9
Acceptable (5 Points)

Age 9
Acceptable (6 Points)

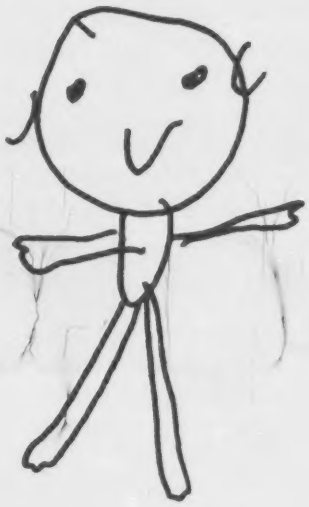
Age 9
Acceptable (8 Points)

76

Age 9
Acceptable (9 Points)

77

Age 13
Unacceptable (2 Points)



Age 13 ·
Unacceptable (4 Points)

Age 13
Acceptable (6 Points)

Age 13
Acceptable (8 Points)

Age 13
Acceptable (11 Points)

CHAPTER 5

OBSERVATIONS

This report, although limited to four drawing items, provides us with valuable information about student art production. The data explore student achievement in various aspects of drawing on a national scale and at three distinct age levels. Since most studies of art either ignore production totally or do not include senior high school students in any case, the results are unique.

A common assumption about the artistic development of students suggests a tailing off or reversal of student achievement with the beginning of the teen-age years. However, on the drawing items administered to more than one age group, the National Assessment results show a steady progression of achievement from ages 9 to 13 and from age 13 to 17 (Exhibit 18).

Exhibit 18 illustrates that while the largest increases in achievement do occur between the ages of 9 and 13, the increases are substantial between ages 13 and 17 as well. These results suggest that achievement in art follows a pattern similar to that found in other learning areas, and that the skills necessary for successful artistic achievement (like other academic skills) can be learned.

Surprisingly, the nonresponse rate of students on these four exercises was extremely low. Although the exercises were very demanding, the percentages of students making no attempt to complete an exercise was never more than 1% and most often much less. These results are comparable to or lower than the nonresponse rates for exercises in other learning areas. The fact that almost all students at least attempted to draw something suggests they were not threatened or inhibited by the drawing tasks. Based on some of the drawings that students produced, they apparently enjoyed the opportunity to draw very much.

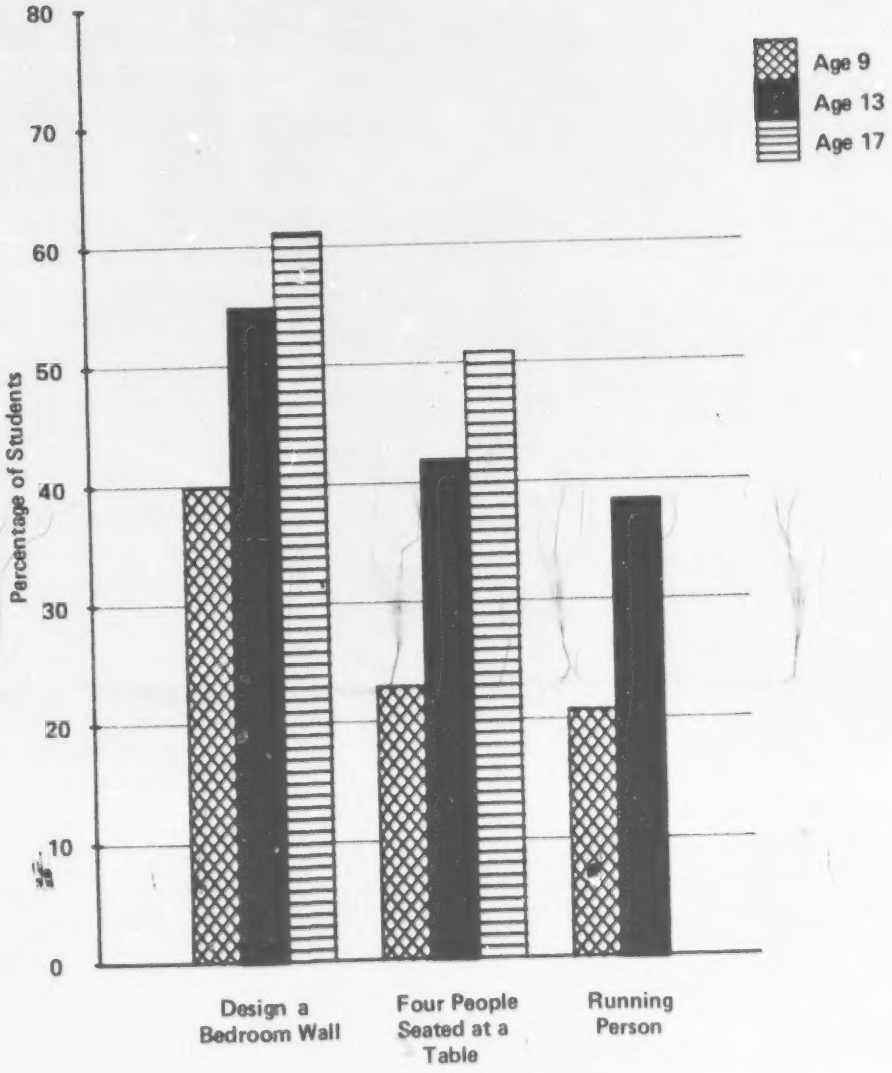
The drawing assessment documents similarity in the scores of male and female students on these four exercises.[1] There were rarely any differences in achievement that could not be attributed to the sample design. The similarity in the achievement of males and females at all ages goes counter to the belief that females like art more than males and therefore perform better in art.

Although male and female achievement did not differ significantly, there were very large discrepancies in the achievement of black and white students and high-metropolitan and low-metropolitan students. As in other learning areas assessed by National Assessment, black and low-metropolitan students consistently achieve far below the level of other students nationally. The hypothesis that deficits in achievement observed for disadvantaged students in highly academic subjects would not show up in art is not borne out by the National Assessment data in this report. The deficits are comparable to or greater than those seen in other learning areas.

A number of background questions relating to performance in art were asked of students and

[1] See Appendix A for the achievement data on male/female, black/white and high- and low-metropolitan students.

FIGURE 18. Age Comparisons on Three Drawing Items: Ages 9, 13 and 17



school principals (see Appendix B for the exact questions that were asked). Students were asked the kinds of artwork they did outside of school, whether they took art classes in school (ages 13 and 17 only) and how often they visited art museums. Principals in schools participating in the art assessment were asked if art was taught in their school. The relationship of these questions to achievement on the drawing exercises is shown in Exhibits 19 through 21.

This information leads to the following observations:

1. There is a consistent relationship between student achievement on these four exercises and the number of different kinds of artwork they do outside of school. Interest in art outside the school appears to be related to increased achievement on school-related drawing tasks.

2. Consistently more students scored acceptably on these drawing items in schools where the principal said art was taught than in schools where art was not taught.

3. There is an irregular but positive relationship between the number of times students visited art museums and their achievement on these drawing exercises.

4. A greater percentage of students who say they have taken one or more art classes acceptably complete these drawing exercises.

The implications for art education seem obvious. Schooling in art does appear to be related to the achievement levels that students attain.

FIGURE 19. The Relationship of Selected Background Questions to Achievement on Drawing Exercises: Age 9

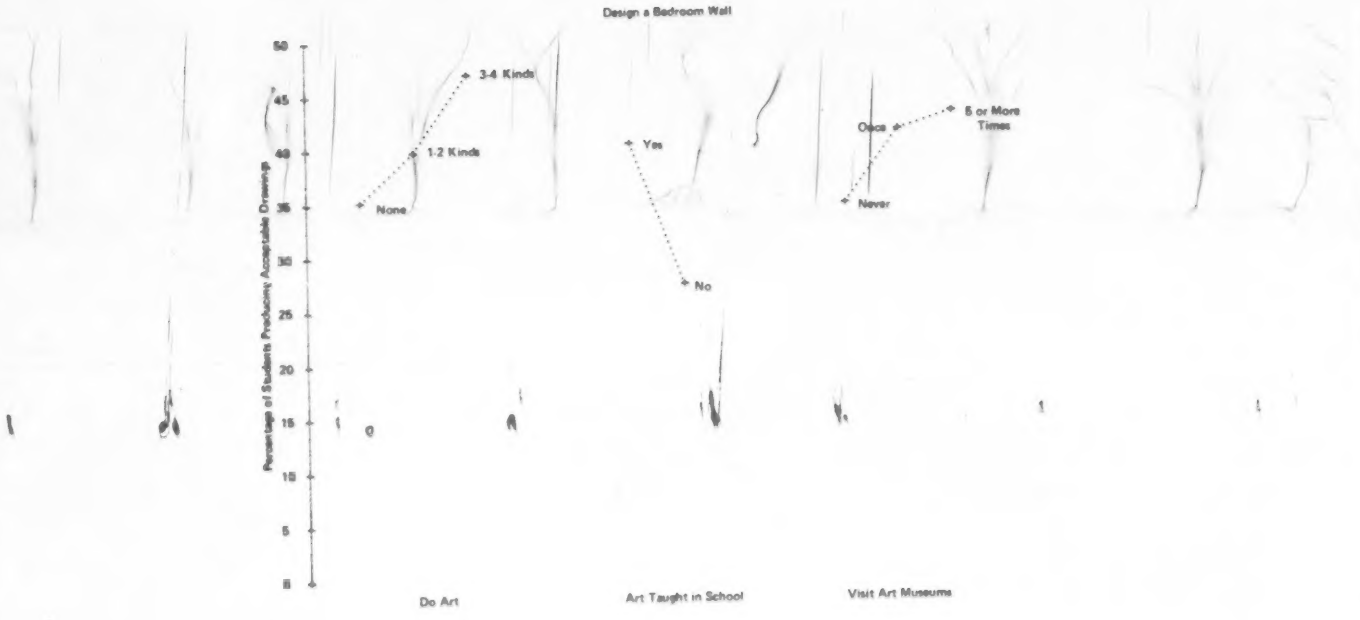
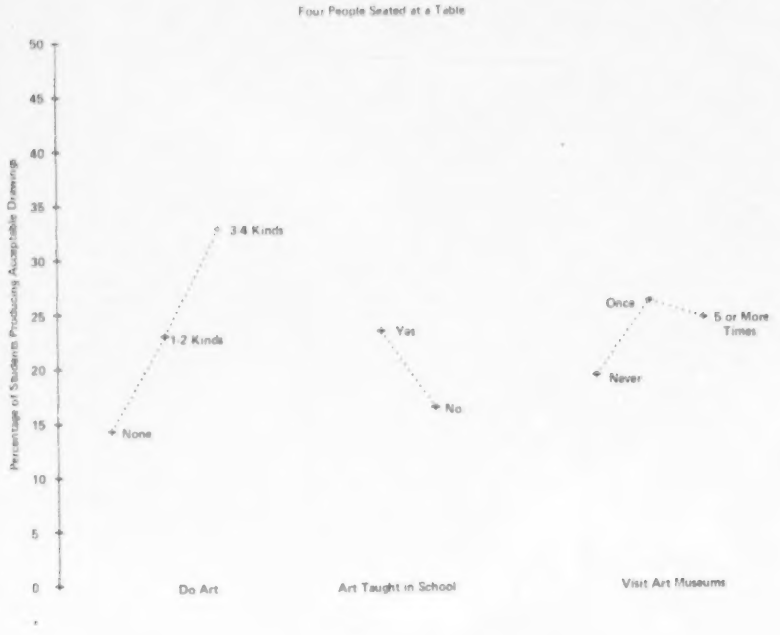


FIGURE 19 (continued). The Relationship of Selected Background Questions to Achievement on Drawing Exercises: Age 9



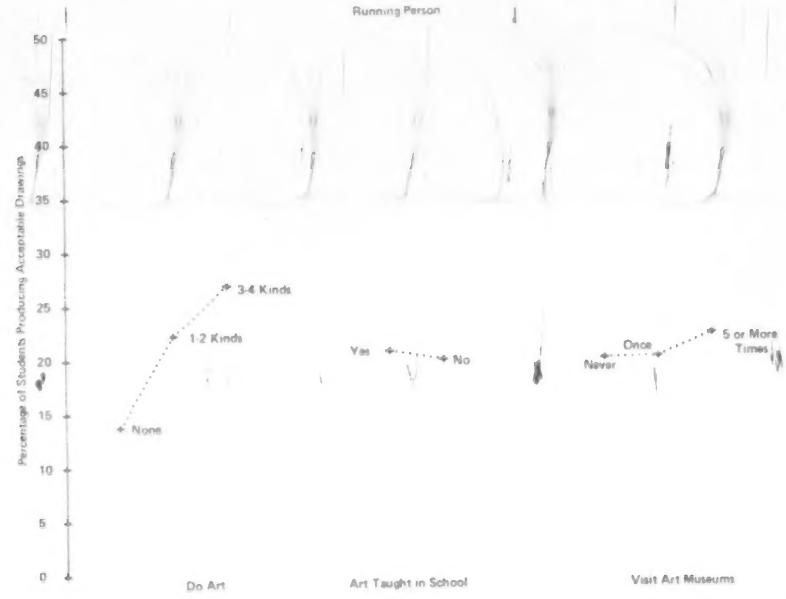


Figure 19 (continued). The Relationship of Selected Background Questions to Achievement on Drawing Exercises: Age 9

FIGURE 20. The Relationship of Selected Background Questions to Achievement on Drawing Exercises: Age 13

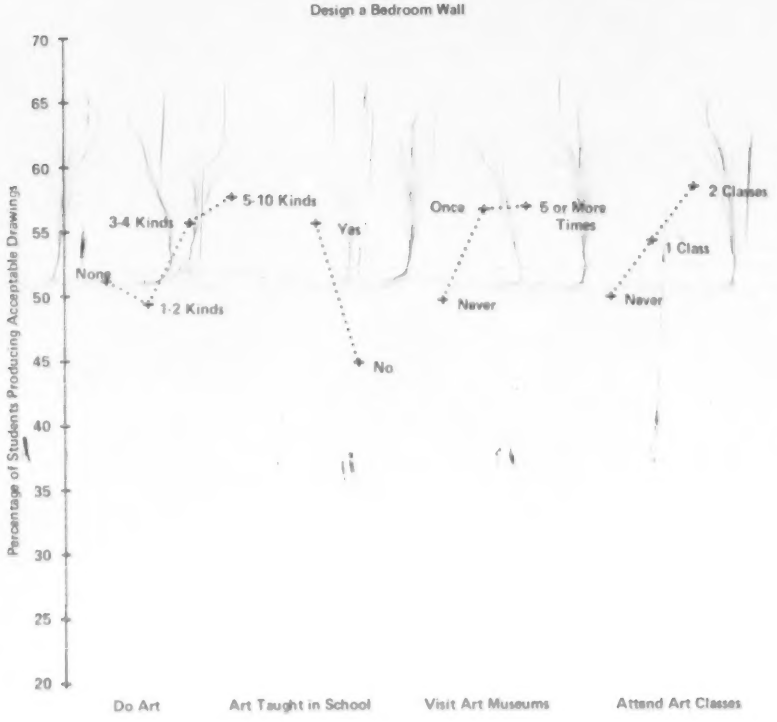


FIGURE 20 (continued). The Relationship of Selected Background Questions to Achievement on Drawing Exercises: Age 13

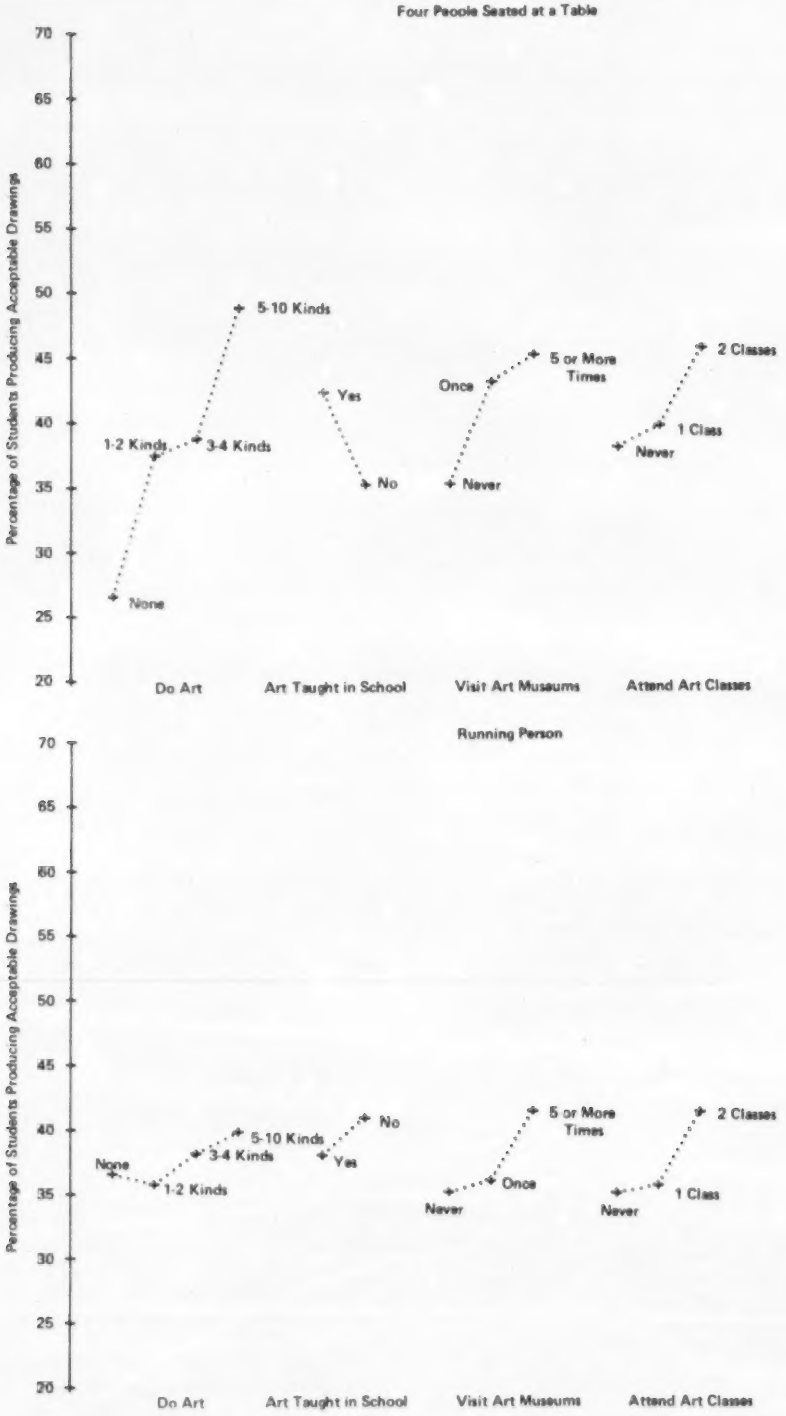
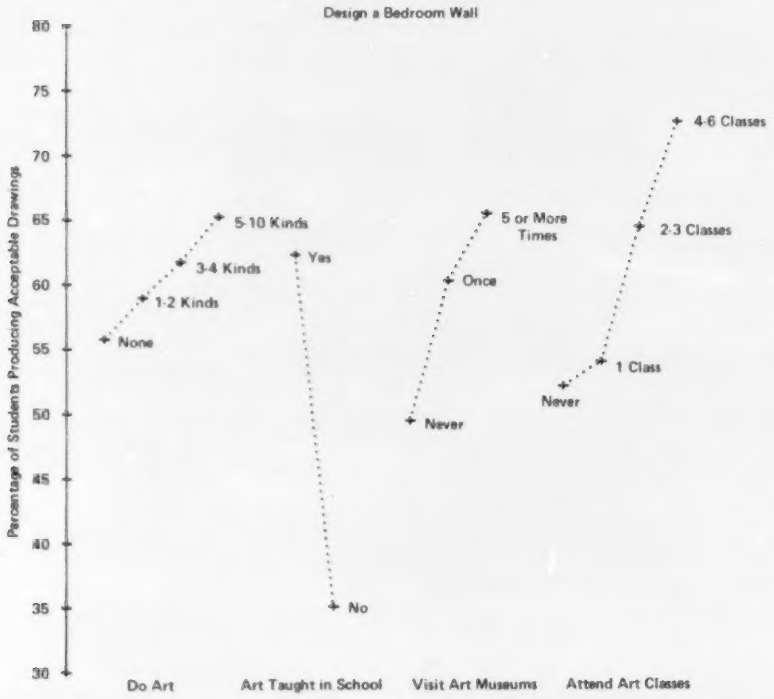
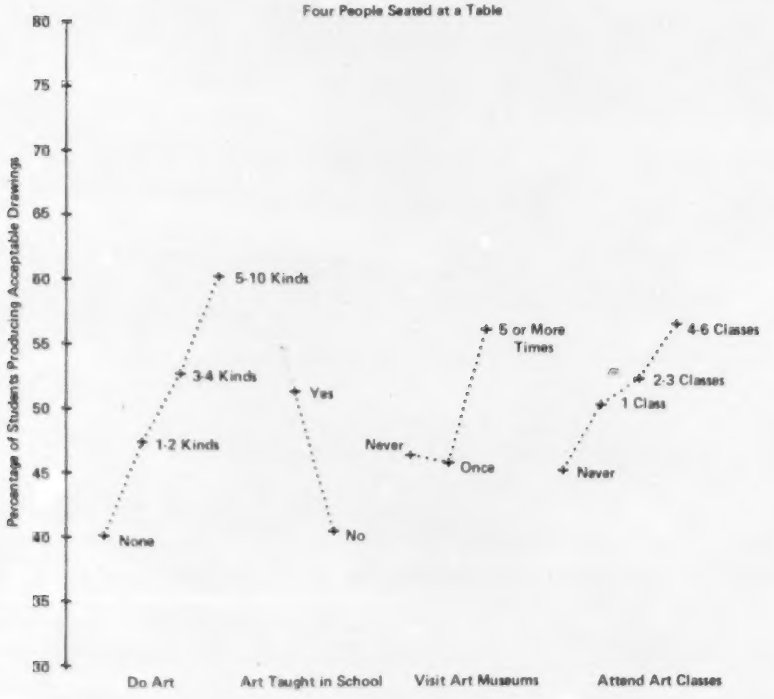


FIGURE 21. The Relationship of Selected Background Questions to Achievement on Drawing Exercises: Age 17





APPENDIX A

SELECTED GROUP RESULTS FOR EACH EXERCISE

Reporting Variables

Sex

Results are presented for males and females.

Race

Currently, results are reported for blacks and whites.

Size and Type of Community

Community types are identified both by the size of the community and by the type of employment of the majority of people in the community.

High metro, high-socioeconomic or affluent urban and suburban communities. Areas in or around cities with a population greater than 200,000 where a high proportion of the residents are in professional or managerial positions.

Low metro, low-socioeconomic or impoverished urban. Areas in or around cities with a population greater than 200,000 where a high proportion of the residents are on welfare or are not regularly employed.

Rural. Areas with a population under 10,000 where most of the residents are farmers or farm workers.

Urban fringe. Communities within the metropolitan area of a city with a population greater than 200,000, outside city limits and not in the high- or low-socioeconomic urban groups.

Main big city. Communities within the city limits of a city with a population over 200,000 and not included in the high- or low-socioeconomic urban groups.

Medium city. Cities with populations between 25,000 and 200,000.

Small places. Communities with a population of less than 25,000 and not in the rural group.

Region

The country has been divided into four regions — Northeast, Southeast, Central and West. The states that are included in each region are shown in Figure 22.

Figure 22. National Assessment Geographic Regions

Parental Education

Four categories of parental education are defined by National Assessment. These categories include: (1) those whose parents have had no high school education, (2) those who have at least one parent with some high school education, (3) those who have at least one parent who graduated from high school and (4) those who have at least one parent who has had some post-high school education.

TABLE 1. Bedroom-Wall Design: Percentage of Students Giving Acceptable Responses

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High Schoo	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Age 9	39.9	-6.2	-2.9	4.8	3.1	-2.3*	2.2*	-11.1*	3.0*	-3.5	-6.2	-1.6	5.2*	-17.1*	-9.9	2.0	3.8	4.1	1.2	4.1
Standard error	1.7	3.5	2.8	2.9	2.6	1.0	0.9	4.0	0.8	5.9	5.8	2.6	1.6	3.5	5.6	2.2	3.5	4.2	4.9	3.9
Age 13	54.9	-13.4*	-0.9	4.8	7.5*	-1.8	1.7	-20.4*	4.3*	-2.6	-8.4*	-2.3	7.6*	-10.3	-16.1*	2.8	-6.6	1.7	1.9	13.2*
Standard error	1.6	2.6	3.4	3.4	2.4	1.3	1.2	3.0	0.8	5.2	5.7	1.7	1.2	6.7	3.9	2.0	3.4	4.0	4.3	3.2
Age 17	61.2	-14.2*	3.6	4.7*	3.0	1.7	-1.7	-21.5*	3.2*	-10.1*	-16.0*	-2.1	6.7*	-0.9	-12.5*	-0.4	-2.3	10.1*	0.9	6.5
Standard error	1.5	2.9	2.4	2.2	2.9	1.2	1.2	3.3	0.7	4.3	4.5	1.9	1.1	3.9	4.9	2.0	3.2	4.1	4.5	4.4

*Denotes a significant difference from the nation.

TABLE 2. Bedroom-Wall Design: Percentage of Student Responses in Each Design and Imagination Category

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Related Elements																				
Age 9	34.1	-6.8*	-1.4	3.5	3.5	-1.1	1.0	-7.7*	1.7*	1.1	-6.7	-3.0	3.0	-10.2*	0.1	0.8	1.5	-1.1	3.1	0.4
Standard error	1.5	2.2	2.5	2.5	2.6	1.1	1.1	3.1	0.6	5.2	4.8	2.4	1.7	2.9	5.3	2.3	3.4	4.7	3.7	3.2
Age 13	42.1	-11.6*	1.4	4.0	4.5	-2.1	2.0	-11.2*	2.1*	-4.8	0.2	-1.7	4.2*	-1.5	-8.6*	-1.0	-5.3	1.7	8.8	6.5
Standard error	1.5	2.1	2.6	2.0	3.3	1.4	1.3	2.8	0.6	5.3	3.7	1.8	1.3	4.3	3.2	1.9	3.1	4.0	5.7	4.3
Age 17	47.6	-8.9*	-5.5	5.8*	6.6*	-0.9	0.8	-10.7*	1.7*	1.8	-8.4*	-0.9	2.2	4.8	-8.5*	-3.2	-6.4	17.0*	9.6	0.2
Standard error	1.6	2.5	3.0	2.0	3.2	1.2	1.2	2.6	0.5	5.6	3.6	2.1	1.4	4.1	3.8	2.1	3.5	5.0	6.6	4.2
Wall Shape																				
Age 9	38.9	-5.9	-3.8	5.0	3.4	-1.9	1.7	-10.6*	2.9*	-3.5	-6.2	-1.4	5.7*	-16.7*	-8.9	1.6	4.4	3.8	0.4	4.0
Standard error	1.7	3.3	2.6	2.8	2.8	1.0	0.9	4.0	0.8	5.9	5.6	2.6	1.6	3.3	5.6	2.2	3.5	4.1	4.8	3.8
Age 13	53.9	-13.8*	-0.5	4.5	7.9*	-1.6	1.6	-20.2*	4.2*	-1.6	-9.6*	-1.8	7.2*	-10.2	-15.2*	2.5	-6.4	2.1	1.6	13.4*
Standard error	1.6	2.4	3.5	2.4	2.4	1.3	1.2	3.2	0.8	5.2	3.6	1.8	1.2	6.7	3.9	2.0	3.5	4.0	4.6	3.2
Age 17	59.8	-13.6*	2.4	4.7*	3.7	1.1	-1.1	-20.9*	3.1*	-8.6	-16.3*	-2.0	6.5*	-1.5	-11.8*	-0.6	-1.8	9.9*	0.9	6.9
Standard error	1.5	3.0	2.6	2.2	2.8	1.2	1.2	3.3	0.6	4.3	4.6	1.9	1.2	4.0	4.9	2.1	3.4	4.4	4.4	4.5
Door Function																				
Age 9	12.4	-1.4	-2.2	4.7*	-1.4	-0.3	0.2	-6.6*	1.9*	-2.9	-4.3	1.6	0.2	-5.9*	-5.9*	0.2	-1.7	3.7	8.4*	1.1
Standard error	1.0	1.7	1.7	1.9	1.7	0.9	0.9	1.3	0.4	2.7	3.0	1.7	1.0	1.7	2.1	1.5	2.0	4.1	3.0	2.5
Age 13	18.6	-4.1*	-0.6	3.2	0.7	2.3*	-2.2*	-7.0*	1.5*	-3.2	-4.5	-2.5	4.5*	-6.2*	-7.0*	1.2	0.0	2.8	0.1	1.8
Standard error	0.9	1.5	1.5	1.6	1.6	0.7	0.7	2.0	0.4	3.3	2.3	1.3	1.0	2.9	2.3	1.4	2.3	3.9	2.6	3.4
Age 17	21.4	-7.7*	4.1*	5.5*	-4.3*	4.1*	-4.0*	-13.1*	1.9*	-8.6*	-4.2	1.5	1.6	-1.7	-7.0*	3.4*	-3.9	3.8	0.9	-2.4
Standard error	1.1	1.9	1.9	1.6	1.8	1.0	1.0	1.5	0.5	3.9	3.1	1.3	1.1	2.5	2.4	1.4	2.5	6.4	2.9	2.9
Unusual Elements																				
Age 9	7.1	-2.0*	0.9	1.4	-0.6	2.9*	-2.7*	-4.1*	0.7*	-4.9*	-3.2	0.0	2.1*	-3.7*	-1.8	-0.7	-0.1	-3.3	2.7	5.1*
Standard error	0.5	0.7	0.9	1.0	0.9	0.6	0.6	0.9	0.3	1.3	2.1	1.1	1.0	1.0	1.6	0.9	1.1	1.9	1.8	1.5
Age 13	17.0	-1.8	-1.1	2.4	-0.1	4.6*	-4.3*	-6.4*	1.1*	-6.3*	-5.5*	-2.8*	4.4*	-3.2	-8.8*	0.5	1.2	-5.1*	1.7	7.8*
Standard error	1.0	1.9	1.6	1.6	1.7	1.1	1.0	1.6	0.4	2.6	2.2	1.3	1.2	2.4	1.8	1.2	2.3	1.9	2.4	2.9
Age 17	26.1	-7.0*	6.4*	-1.4	1.2	4.3*	-4.2*	-17.1*	2.3*	-7.6	-4.5	1.2	1.9	-0.8	-6.9*	0.1	3.7	4.9	0.0	-3.2
Standard error	1.2	2.0	2.6	1.6	2.4	1.2	1.2	2.0	0.5	4.0	3.5	1.4	1.0	3.6	2.5	1.6	3.8	7.7	3.3	4.0
Novel Combination																				
Age 9	1.3	-0.9*	0.8	0.6	-0.6*	0.3	-0.3	-1.0*	0.1	-0.9	-1.3*	0.8	0.0	1.3*	0.2	0.4	-1.0*	0.4	0.0	1.0
Standard error	0.2	0.3	0.6	0.5	0.2	0.3	0.3	0.4	0.1	0.5	0.2	0.6	0.3	0.2	0.8	0.5	0.3	1.0	0.9	0.6
Age 13	1.4	-0.4	-0.1	0.0	0.6	0.7*	-0.7*	-0.4	0.1	-0.2	-1.0*	-0.3	0.7*	-1.1*	0.4	-0.5	0.3	0.2	0.8	0.3
Standard error	0.3	0.3	0.5	0.5	0.5	0.3	0.3	0.6	0.1	1.0	0.4	0.4	0.3	0.4	1.3	0.3	0.7	0.7	0.9	0.8
Age 17	3.3	-1.9*	-0.4	1.5	0.2	-0.5	0.5	-2.1*	0.3*	-2.4*	2.1	0.0	0.1	2.0	-1.9*	-0.5	-0.9	-0.3	-0.6	3.2
Standard error	0.5	0.6	0.7	0.8	1.0	0.5	0.5	0.6	0.1	0.9	2.3	0.7	0.6	1.7	0.8	0.6	0.9	1.6	1.5	1.3

*Denotes a significant difference from the nation.

TABLE 3. Four People Seated at a Table: Percentage of Students With Acceptable Responses

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Graduated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Age 9	22.9	-7.4*	0.5	-1.2	6.7*	-1.3	1.2	-12.3*	2.6*	-2.5	-6.7	1.2	5.4*	-12.9*	-4.6	-0.2	-0.7	-3.9	7.8*	5.1*
Standard error	1.1	1.8	1.6	1.8	2.0	1.1	1.0	1.6	0.5	4.2	3.7	2.0	1.4	3.0	2.4	1.5	2.0	2.9	3.0	1.9
Age 13	41.9	-8.1*	-2.2	6.3*	3.5	0.1	-0.1	-24.1*	4.1*	-10.8*	-12.9*	-0.5	7.7*	-16.2*	-6.1	0.6	-3.3	-1.4	6.5	13.1*
Standard error	1.4	2.6	2.1	2.0	2.4	1.2	1.2	2.8	0.7	4.1	3.9	2.1	1.6	6.8	3.9	1.6	3.0	4.8	3.3	5.4
Age 17	50.9	-10.6*	4.9*	4.0	-0.7	-1.6	1.6	-27.4*	4.4*	-12.6*	-12.9*	-0.3	6.6*	-12.0*	-5.3	1.7	0.2	-6.5	6.3	8.7*
Standard error	1.6	2.5	2.4	2.8	2.7	1.4	1.3	2.3	0.7	4.4	3.8	1.5	1.3	5.0	4.4	2.0	3.1	4.9	3.2	4.3

*Denotes a significant difference from the nation.

TABLE 4. Four People Seated at a Table: Percentage of Student Responses Within Each Table-Top Response Category

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Graduated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Foreshortened, Tilted Plane																				
Age 9	19.7	0.6	-1.1	-2.5	3.1	-1.6	1.6	1.6	-0.4	2.5	-0.9	-0.5	-0.1	-0.5	1.8	-2.7*	1.9	-2.7	2.7	2.7
Standard error	1.0	1.8	1.6	1.4	1.9	1.0	1.0	2.5	0.5	4.7	3.6	1.6	1.2	3.6	2.9	1.4	2.2	4.8	3.0	3.2
Age 13	20.7	-2.8	-4.3*	5.7*	3.3*	0.1	-0.1	-5.5	1.5*	-0.2	-5.8*	0.0	1.9	-1.7	-1.1	1.7	-0.5	-6.6*	2.3	-2.9
Standard error	1.0	1.8	1.9	1.5	1.6	1.1	1.1	3.1	0.5	3.5	2.8	1.3	1.1	4.6	2.5	1.6	2.8	2.7	2.7	3.3
Age 17	32.6	-4.0	2.5	4.2*	-3.9	1.0	-1.0	-13.5*	2.1*	-9.7*	-11.0*	-2.1	5.8*	-7.8	-3.8	2.5	3.0	-7.4	1.7	1.6
Standard error	1.3	2.3	2.6	2.0	2.0	1.3	1.2	3.2	0.5	4.1	2.8	1.7	1.3	3.9	4.7	1.7	2.9	4.1	2.8	4.3
Not Foreshortened, Tilted Plane																				
Age 9	16.5	-2.1	0.4	-0.2	1.5	-2.5*	2.5*	-0.3	-0.2	-0.4	0.0	-2.6	0.2	3.1	1.6	-0.4	0.1	3.1	-1.0	-2.4
Standard error	0.9	1.5	1.6	1.7	1.4	1.1	1.1	2.3	0.5	4.1	3.6	1.5	1.3	3.2	2.7	1.1	1.7	3.5	1.9	2.6
Age 13	23.0	-2.5	3.0	-1.9	1.8	-3.3*	3.2*	-6.1*	0.1	-0.7	2.2	-0.9	-0.2	-2.9	0.0	-1.9	-0.6	3.2	4.1	3.4
Standard error	1.3	1.8	2.8	1.9	2.5	1.1	1.0	2.6	0.5	3.7	3.3	1.1	1.0	5.6	3.4	1.5	4.0	4.2	3.4	3.2
Age 17	21.3	1.6	-4.9*	-0.6	3.8	-2.1*	2.0*	-5.2	0.8	-1.1	1.9	2.2	-1.5	-4.4*	-1.2	-1.2	2.2	1.7	0.3	5.7
Standard error	1.0	2.1	1.7	1.4	2.0	1.0	1.0	2.6	0.5	3.6	2.8	1.5	1.1	1.7	2.5	1.5	3.1	4.3	3.3	3.8
Eye-Level View																				
Age 9	33.3	-0.7	3.0	-0.8	-1.5	6.9*	-6.8*	-2.1	1.1*	-3.9	5.2	1.5	0.9	-5.2	-6.2*	1.0	1.7	-0.8	2.0	-0.1
Standard error	1.2	1.9	2.3	1.9	1.9	1.2	1.1	2.4	0.5	4.8	4.6	2.5	1.6	3.4	2.5	1.6	2.7	3.3	3.0	4.6
Age 13	22.4	-0.2	-0.6	1.9	-1.7	7.4*	-7.2*	1.7	0.1	-3.0	-7.8*	-0.4	2.2	4.1	-0.9	0.8	-0.5	2.0	-4.7	1.0
Standard error	1.2	2.4	2.0	1.8	2.0	1.1	1.1	2.4	0.4	3.8	2.5	1.5	1.2	3.6	3.6	1.4	2.5	4.0	2.9	3.8
Age 17	14.6	1.2	1.0	1.3	-3.5*	4.3*	-4.1*	1.8	0.2	-4.4	1.3	1.9	-1.2	-0.9	3.0	0.4	-1.6	2.8	0.0	-2.0
Standard error	0.8	1.6	1.6	1.4	1.2	0.9	0.8	2.5	0.4	3.4	2.5	1.4	1.0	1.7	4.8	1.4	2.0	2.8	2.1	2.6
Bird's-Eye View																				
Age 9	22.9	2.4	-3.5	4.3	-3.3	-2.3*	2.3*	-0.2	0.0	1.2	-4.7	-0.2	-0.2	0.8	5.6	3.2*	-4.5	1.0	-6.2*	0.3
Standard error	1.3	3.1	1.7	2.2	1.9	1.1	1.1	2.2	0.5	5.4	3.8	1.8	1.4	4.0	3.4	1.6	2.4	4.7	2.5	3.2
Age 13	20.3	6.9*	1.7	-2.4	-6.5*	-3.2*	3.1*	13.5*	-1.9*	2.3	10.7*	2.1	-4.5*	4.5	3.3	0.8	1.5	1.1	-4.4	-7.4
Standard error	1.3	2.2	2.2	1.9	2.7	1.2	1.1	3.1	0.5	4.2	3.8	1.5	1.4	5.6	4.5	1.6	2.9	3.9	3.6	3.9
Age 17	12.8	3.9	-1.5	-0.8	-0.8	-3.4*	3.3*	13.5*	-2.1*	14.2*	5.9	-0.6	-3.3*	4.9	7.8*	-1.6	-2.4	5.6*	0.4	-6.7*
Standard error	0.9	2.1	1.7	1.3	1.4	0.7	0.7	2.3	0.5	4.4	3.0	1.1	0.9	2.9	3.0	1.3	1.7	2.8	2.5	2.0
Reverse Foreshortening																				
Age 9	6.7	0.2	0.7	-0.9	0.2	-0.6	0.6	0.5	-0.1	-2.4	0.5	1.2	-0.6	1.4	-0.4	-0.9	0.8	-1.8	2.2	-0.2
Standard error	0.6	1.5	1.0	0.8	0.9	0.6	0.6	1.1	0.3	2.0	2.0	1.3	0.9	2.5	1.7	0.8	1.1	2.0	1.5	1.7
Age 13	12.8	-1.7	0.4	-1.3	3.1	-1.1	1.1	-3.7	0.3	2.3	0.8	-1.3	0.8	-3.1	-1.5	-0.9	0.4	-2.1	1.9	5.8
Standard error	0.8	1.5	1.3	1.3	1.6	0.8	0.8	2.0	0.4	3.8	3.2	1.0	0.8	2.4	1.9	1.1	2.0	2.8	2.7	3.8
Age 17	13.5	-3.4*	2.1	-2.8*	4.1*	-1.1	1.0	-0.5	-0.4	2.6	0.4	-1.4	0.5	4.2	-5.8*	-0.6	0.5	-1.5	-0.3	1.9
Standard error	0.9	1.6	2.0	1.2	1.7	0.8	0.8	2.2	0.4	3.1	2.4	1.2	0.9	3.4	1.8	1.2	2.3	3.3	2.8	1.9

*Denotes a significant difference from the nation.

TABLE 5. Four People Seated at a Table: Percentage of Student Responses Within Each Table-Leg Perspective Category

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
No Legs Shown																				
Age 9	20.5	-3.6	-1.5	3.5	0.6	-2.5	2.2	0.0	0.0	0.2	-7.4*	-2.2	0.4	2.8	3.2	-1.9	0.9	-1.2	-2.1	7.2
Standard error	1.3	2.0	1.9	2.6	1.7	1.3	1.2	2.0	0.5	5.1	3.5	1.5	1.4	2.5	2.7	1.6	2.5	3.6	3.5	5.0
Age 13	21.2	1.8	-0.5	-0.1	-1.4	-3.8*	3.7*	4.9	-1.2	-1.6	9.7*	0.8	-2.7*	2.7	1.0	0.2	3.2	0.0	-5.6	-1.7
Standard error	1.1	2.0	1.9	1.6	2.5	1.2	1.1	3.3	0.6	3.7	3.6	1.5	1.1	4.3	4.3	1.2	2.5	3.6	3.9	2.8
Age 17	20.6	4.2	0.2	-3.6*	0.7	-3.6*	3.4*	13.0*	-2.3*	15.8*	7.3*	-2.6*	-2.7*	5.3	8.3*	-1.9	-3.1	11.6*	-4.9	-3.1
Standard error	1.1	2.7	2.2	1.6	1.8	1.0	1.0	2.4	0.5	4.0	3.6	1.2	0.9	2.9	2.4	1.4	2.3	4.1	2.7	2.5
Legs Foreshortened																				
Age 9	12.1	-0.4	-1.0	-4.3*	5.6*	-2.3*	2.3*	-3.8*	0.7*	-6.6*	2.6	0.3	1.5	-0.1	-5.9*	-0.9	-1.3	-1.0	6.8*	2.4
Standard error	0.8	2.1	1.5	1.2	1.3	0.8	0.8	1.1	0.3	2.1	3.5	1.6	1.3	2.8	1.8	1.2	2.0	2.2	2.0	2.2
Age 13	23.7	-1.1	-1.1	1.2	0.8	-0.7	0.7	-11.7*	2.2*	-0.3	-3.3	-1.0	2.5*	-3.6	-5.6*	-1.1	2.6	-5.7	6.3	3.0
Standard error	1.1	1.8	2.1	1.7	2.3	1.2	1.2	2.2	0.5	4.2	3.5	1.6	1.2	2.5	2.1	1.3	2.2	3.4	3.8	4.9
Age 17	32.3	-8.5*	4.8*	7.6*	-6.6*	2.2	-2.1	-22.2*	3.6*	-9.0*	-10.1*	-3.0	6.4*	-14.9*	-8.5*	3.1	0.7	-6.8	5.2	10.1*
Standard error	1.4	2.2	2.3	2.4	2.8	1.3	1.2	2.1	0.6	4.2	3.0	1.7	1.3	3.5	3.2	2.0	2.8	3.6	3.7	4.4
Legs Not Foreshortened																				
Age 9	67.0	4.1	2.1	0.6	-5.8*	4.5*	-4.5*	5.1	-0.5	5.1	5.2	2.3	-1.7	-2.2	3.2	2.7	2.0	2.7	-5.1	-9.2*
Standard error	1.4	2.3	2.1	2.9	2.1	1.3	1.2	2.0	0.5	5.5	4.1	2.3	1.5	2.7	2.8	1.8	2.2	2.8	4.1	3.9
Age 13	54.3	-1.0	1.7	-1.0	0.4	4.3*	-4.1*	6.6	-0.9	2.5	-6.4	0.0	0.2	1.6	4.3	1.2	-5.4	4.3	-1.5	-1.5
Standard error	1.5	2.2	2.5	2.3	3.0	1.4	1.3	4.0	0.7	4.4	3.9	1.5	1.4	4.3	4.4	1.5	3.5	4.1	3.5	3.9
Age 17	42.4	3.0	-5.9*	-2.9	6.3*	0.1	-0.1	4.7	-0.5	-5.8	1.1	5.4*	-3.1*	7.4*	0.8	-2.3	3.4	-3.5	1.4	-5.9
Standard error	1.4	2.3	2.3	2.1	2.7	1.2	1.1	2.7	0.5	4.1	3.5	1.7	1.3	2.9	3.6	1.9	3.2	4.4	4.3	3.5

*Denotes a significant difference from the nation.

TABLE 6. Four People Seated at a Table: Percentage of Student Responses Within Each Chair-Leg Category

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
No Legs Shown																				
Age 9	35.3	4.0	-3.2	1.3	-1.6	-2.7*	2.7*	10.8*	-2.3*	-3.4	-0.5	0.0	-5.2*	12.0*	7.7*	-0.1	-0.2	-1.9	-4.2	-5.9*
Standard error	1.2	2.8	2.1	2.2	1.8	1.2	1.2	2.7	0.6	5.0	5.1	2.5	1.5	5.0	3.3	1.8	3.5	4.2	3.0	2.7
Age 13	28.6	3.2	-1.0	-0.2	-2.1	-5.5*	5.5*	15.2*	-2.4*	6.8	16.2*	1.2	-6.6*	8.8	10.1*	-1.5	1.9	-1.1	-2.4	-9.0*
Standard error	1.3	2.6	2.2	2.0	2.7	1.1	1.1	3.9	0.6	3.5	4.9	1.4	1.4	6.2	4.6	1.5	2.7	3.8	3.0	2.8
Age 17	19.6	9.2*	-2.9	-6.6*	5.1	-5.1*	5.0*	21.0*	-5.6*	14.5*	7.9*	0.8	-4.6*	10.4*	4.7	-2.6	1.2	7.8*	-6.4*	-5.7
Standard error	1.1	2.8	1.7	1.4	2.1	1.0	1.0	3.4	0.7	4.7	3.3	1.5	1.1	4.1	5.2	1.5	2.5	3.6	2.4	3.0
Legs Foreshortened																				
Age 9	6.2	-2.8*	-1.0	-0.1	3.2*	-0.2	0.2	-4.7*	1.0*	1.2	-2.9	-1.1	1.7*	-1.9	-2.8	-0.7	-0.3	-0.8	4.5*	0.9
Standard error	0.5	1.1	0.9	0.8	1.0	0.6	0.5	0.9	0.2	3.4	1.8	0.9	0.8	1.8	1.5	0.9	1.5	1.9	1.8	1.8
Age 13	18.8	-3.7*	-2.6	2.5	3.9*	0.1	-0.1	-12.6*	1.8*	-8.4*	-8.5*	-1.4	5.5*	-9.2*	-8.8*	-0.6	1.1	-2.3	5.6	12.2*
Standard error	1.1	1.7	2.2	1.7	1.8	1.0	0.9	1.4	0.4	3.3	3.3	1.4	1.1	2.5	2.6	1.5	2.1	4.9	3.1	3.9
Age 17	26.0	-6.2*	3.1	3.9	-2.5	-0.7	0.7	-17.4*	2.8*	-10.7*	-9.7*	-0.7	4.9*	-7.6	-4.7	-1.3	1.3	-2.8	2.5	14.4*
Standard error	1.3	2.3	2.2	2.0	2.6	1.1	1.1	1.9	0.5	3.6	2.8	1.8	1.2	4.0	4.2	1.8	2.8	4.2	4.0	3.7
Legs Not Foreshortened																				
Age 9	58.0	-1.0	3.9	-1.4	-1.2	2.9*	-2.8*	-6.7*	1.5*	-1.2	3.8	1.5	3.8*	-9.7*	-1.4	0.6	0.4	3.1	-0.7	5.3
Standard error	1.3	2.9	2.2	2.2	1.7	1.0	1.0	2.6	0.6	6.2	5.1	2.1	1.6	4.3	5.4	1.6	3.2	4.0	3.6	3.5
Age 13	51.8	0.3	3.7	-2.1	-2.0	5.2*	-5.0*	-2.8	0.6	2.1	-7.7	0.0	1.2	1.1	-1.6	2.4	-2.5	1.9	-2.1	-3.5
Standard error	1.5	2.9	2.9	2.0	2.3	1.3	1.3	4.4	0.6	3.9	4.7	1.5	1.6	7.2	4.2	1.7	3.0	7.7	2.9	3.5
Age 17	49.7	-4.3	-1.0	3.8*	-0.2	2.5*	-2.4*	-8.1*	1.5*	-2.9	0.1	-0.3	0.5	-5.1	0.6	2.9	-1.4	-3.7	5.7	-7.6
Standard error	1.3	2.8	2.4	1.9	2.3	1.2	1.2	3.7	0.6	4.6	3.8	1.8	1.3	3.7	5.3	1.8	3.2	4.5	3.4	3.8

*Denotes a significant difference from the nation.

TABLE 7. Four People Seated at a Table: Percentage of Students Using Distance- and Overlap-Perspective Techniques

	National	Southeast	West	Central	Northeast	Male	Female	Black	White	No High School	Some High School	Graduated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Near Figure Lower																				
Age 9	39.8	-7.5*	-0.3	-2.2	8.5*	-2.3	2.2	-10.8*	2.2*	1.3	-4.6	1.7	1.6	-9.3	1.1	-3.4	2.8	0.1	3.1	6.6*
Standard error	1.3	2.9	2.1	2.1	2.1	1.2	1.2	2.4	0.6	5.3	4.8	2.4	1.7	5.3	4.1	2.0	3.1	4.4	3.9	3.3
Age 13	49.0	-10.5*	-0.5	3.7*	7.4*	-1.5	1.5	-17.8*	2.5*	-0.8	-6.1	-2.3	5.3*	-11.5*	-3.9	2.6	-7.5*	-1.5	7.3*	5.4
Standard error	1.4	2.7	2.5	1.8	2.0	1.4	1.3	3.7	0.7	4.4	3.9	1.6	1.5	5.5	4.4	1.8	3.4	4.0	3.5	4.0
Age 17	56.3	-5.3*	3.7	-1.0	2.0	-2.0	1.9	-21.8*	3.6*	-12.3*	-6.6	2.2	3.1*	-12.4*	-4.3	3.0	1.1	-1.1	-1.5	8.5*
Standard error	1.6	2.6	2.3	2.9	2.8	1.3	1.2	3.0	0.7	4.8	4.6	1.6	1.4	3.7	4.9	2.0	3.0	5.6	3.4	4.3
Distant Figure Higher																				
Age 9	48.5	-6.0	-0.8	-3.1	8.7*	-2.1	2.1	-12.1*	2.7*	-5.1	-8.0	1.9	3.0	-11.9*	-0.6	-2.9	6.4	-1.3	2.2	3.5
Standard error	1.3	3.2	2.1	2.0	2.2	1.2	1.2	2.5	0.6	5.6	4.9	2.3	1.6	5.7	4.6	1.7	3.9	3.2	3.4	2.9
Age 13	56.9	-10.4*	-1.6	1.4	11.5*	-1.9	1.9	-16.4*	2.6*	-3.3	-7.0	-2.2	5.9*	-7.5	-1.5	-1.2	-3.6	-2.8	8.6	8.8*
Standard error	1.5	2.6	2.4	2.0	2.6	1.3	1.3	3.3	0.7	3.8	4.5	1.7	1.4	6.5	3.7	1.7	3.1	5.5	4.7	4.1
Age 17	64.8	-6.7*	1.8	-0.3	4.1	-3.6*	3.5*	-19.2*	2.6*	-8.9	-5.9	-0.4	3.6*	-5.1	-3.2	1.7	-0.7	-6.3	-0.4	8.7*
Standard error	1.6	3.0	2.3	3.0	2.4	1.2	1.1	2.8	0.6	4.7	3.5	1.7	1.5	3.7	4.7	1.7	3.5	5.7	3.1	3.8
Figure Overlapping Table																				
Age 9	15.7	-6.4*	3.6*	0.4	1.6	-0.4	0.4	-13.0*	2.7*	-4.1	-3.1	-0.2	3.4*	-8.6*	-2.2	-0.3	1.7	-3.2	1.6	4.3
Standard error	1.0	1.4	1.5	1.8	1.6	1.0	1.0	1.2	0.4	2.8	3.4	1.9	1.3	2.4	2.3	1.3	2.3	3.3	2.6	2.7
Age 13	37.4	-5.0	-1.1	5.1*	0.2	-0.3	0.3	-25.1*	4.2*	-7.8	-16.2*	-4.1*	9.2*	-13.0*	-10.6*	1.1	-2.7	-0.9	2.6	17.0*
Standard error	1.3	2.7	2.2	2.0	2.4	1.2	1.2	2.6	0.6	4.1	2.9	1.5	1.5	6.1	4.7	1.7	3.5	6.1	2.7	3.9
Age 17	45.5	-10.8*	6.7*	4.8*	-3.2	-2.3	2.2	-21.8*	3.7*	-15.3*	-8.1*	-1.9	6.8*	-8.6*	0.4	-0.8	-1.8	0.0	4.4	10.3*
Standard error	1.4	2.4	2.2	2.3	2.0	1.4	1.3	2.8	0.6	4.1	3.8	1.5	1.1	3.6	4.6	1.6	3.5	4.0	3.6	3.2
Table Overlapping Figure																				
Age 9	34.2	-9.4*	3.3	2.9	1.7	-0.5	0.5	-16.3*	2.8*	-2.5	-7.7	-3.3	6.5*	-12.0*	-7.0	-2.6	3.1	-7.2	10.8*	6.4
Standard error	1.1	1.9	2.0	2.0	1.8	1.2	1.2	2.4	0.6	5.1	4.9	2.2	1.8	4.8	3.6	1.9	2.2	4.7	3.5	3.3
Age 13	59.3	-7.0*	-2.4	5.8*	3.1	1.1	-1.1	-23.3*	3.6*	-8.5	-10.5*	0.1	7.0*	-11.2	-7.1	2.2	0.6	-11.4*	1.6	9.9
Standard error	1.4	2.5	2.3	2.2	2.9	1.2	1.2	3.3	0.7	4.3	4.1	1.8	1.7	5.7	3.6	1.6	3.4	5.2	3.4	5.0
Age 17	67.8	-12.7*	4.7*	5.3*	-0.3	0.2	-0.2	-24.0*	3.7*	-11.9*	-8.6*	0.3	4.6*	-7.1	-6.1	0.5	-1.4	-6.5	5.1	11.9*
Standard error	1.4	2.6	2.2	2.3	2.3	1.2	1.2	2.9	0.7	4.7	3.7	1.5	1.4	4.1	4.5	1.6	3.3	4.7	2.9	2.9
Figure Overlapping Figure																				
Age 9	7.4	-4.2*	1.4	1.8	0.4	1.6*	-1.6*	-5.5*	1.3*	-2.3	-3.3	-0.6	3.1*	-4.8*	-3.8*	1.8	-3.3*	-0.5	2.3	2.7
Standard error	0.7	1.0	1.2	1.3	1.3	0.6	0.6	0.9	0.3	2.2	2.5	1.1	1.2	1.3	1.2	0.9	1.1	3.2	1.9	2.2
Age 13	12.9	-2.4	-1.5	3.0*	0.6	2.0*	-1.9*	-7.0*	1.4*	-3.1	-7.9*	-1.5	3.8*	-3.3	-0.8	1.1	-1.6	-4.0	-0.1	4.2
Standard error	0.8	1.4	1.4	1.2	1.7	0.9	0.8	1.4	0.3	2.9	1.5	1.1	0.9	2.7	2.3	1.0	2.0	3.0	1.7	3.4
Age 17	16.8	-5.6*	2.0	3.2	-1.1	2.9*	-2.8*	-10.6*	2.1*	-1.9	-5.0*	-0.5	2.7*	-7.1*	2.4	0.2	-2.1	-3.8	5.2	5.6*
Standard error	1.0	1.6	1.7	1.8	1.6	0.9	0.9	1.9	0.4	3.5	2.1	1.5	1.0	1.9	3.7	1.4	1.8	2.8	3.2	2.7

*Denotes a significant difference from the nation.

TABLE 8. Four People Seated at a Table: Percentage of Students Following Exercise Instructions

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Four or More Figures Drawn																				
Age 9	80.8	-1.1	-3.5	3.3	0.6	-2.7*	2.6*	-10.1*	2.3*	-6.0	-5.6	-1.1	3.2*	-10.5*	4.2	3.1	-1.6	-5.1	-2.8	0.8
Standard error	1.3	3.5	1.9	1.9	2.1	1.1	1.1	3.0	0.6	4.9	4.5	1.8	1.4	3.6	2.3	1.6	2.8	4.5	4.1	2.5
Age 13	78.7	-2.5	-4.5	3.0	4.3*	-1.5	1.4	0.6	0.7	-2.0	-0.3	-0.5	1.4	-0.4	-0.7	2.4	-3.0	-4.6	0.9	-2.1
Standard error	1.3	2.6	2.3	2.0	2.1	1.0	1.0	2.9	0.5	4.2	3.2	1.2	0.9	3.4	2.6	1.7	3.6	3.8	4.1	3.4
Age 17	74.9	-2.3	0.7	-0.3	1.9	-3.5*	3.4*	-4.0	0.4	5.2	-5.8	0.9	0.4	-3.2	0.1	-0.3	0.1	-2.5	6.2	-1.6
Standard error	1.5	3.0	2.3	2.5	2.4	1.1	1.1	2.4	0.4	3.6	3.1	1.4	1.1	4.0	4.6	2.1	3.2	4.9	3.4	3.5
Figures Seated																				
Age 9	26.2	-8.1*	4.9*	-0.2	2.4	3.8*	-3.8*	-12.4*	2.5*	-9.3*	-8.0*	0.9	6.9*	-10.6*	-3.7	-1.7	-1.1	-1.0	7.6*	7.0*
Standard error	1.2	1.8	2.4	2.0	2.0	0.9	0.9	2.0	0.6	3.2	3.4	2.2	1.6	4.1	3.8	1.5	2.5	4.6	3.7	3.1
Age 13	41.3	-3.2	-0.7	1.5	2.5	4.5*	-4.4*	-18.0*	3.7*	-7.0	-13.8*	0.1	7.6*	-9.6	-11.9*	1.2	-0.5	1.0	2.7	9.8
Standard error	1.3	2.2	2.1	1.9	2.3	1.2	1.1	2.6	0.6	5.0	3.7	2.1	1.6	6.2	3.3	1.8	2.4	6.6	4.3	6.0
Age 17	47.7	-12.0*	6.7*	3.8	-1.0	2.3	-2.2	-22.3*	4.0*	-18.8*	-8.1*	-1.1	6.4*	-12.5*	-2.9	0.9	-1.1	-5.9	7.1	11.0*
Standard error	1.3	1.8	2.1	2.4	2.1	1.3	1.3	2.8	0.6	4.2	3.2	1.8	1.3	2.7	4.8	1.7	3.2	5.3	4.2	4.3
Figures on Four Sides																				
Age 9	60.7	-5.1	-0.9	0.1	4.7	-1.7	1.7	-17.3*	3.5*	-0.7	-12.4*	1.1	4.6*	-13.5*	1.3	3.0	-2.9	-8.1*	-1.8	7.8*
Standard error	1.6	3.0	2.3	2.9	2.5	1.3	1.3	2.6	0.7	5.3	5.1	2.2	1.9	6.5	2.9	1.9	3.5	3.4	5.2	3.6
Age 13	69.1	-2.6	-4.1	1.8	5.4*	-2.6*	2.5*	-2.2	1.4*	-6.8	-0.8	-0.7	4.0*	-9.2	-0.3	3.5	-4.5	-5.1	1.7	0.9
Standard error	1.5	3.4	2.6	2.0	2.1	1.1	1.1	4.1	0.7	5.0	4.2	1.5	1.1	5.2	3.5	1.9	3.8	4.9	4.3	3.1
Age 17	67.4	-5.0	1.3	1.8	0.6	-5.3*	5.1*	-12.5*	2.1*	0.2	-5.9	1.2	2.0	-8.4	-0.7	0.7	2.1	-2.6	5.5	-0.5
Standard error	1.6	2.7	2.3	2.7	2.8	1.3	1.3	2.4	0.5	3.8	3.6	1.5	1.2	4.6	5.4	2.2	3.9	5.2	2.9	4.2
Figures Complete																				
Age 9	51.2	-1.1	-1.7	-2.2	4.6*	-2.9*	2.9*	-3.1	0.6	-11.4*	-7.6	6.0*	0.4	1.6	-9.2*	1.1	-4.7	3.5	5.1	2.7
Standard error	1.3	2.5	2.6	2.0	1.8	1.3	1.2	3.4	0.7	5.5	5.3	2.2	2.0	3.9	3.0	1.7	2.5	5.2	2.8	3.1
Age 13	55.2	-0.1	-0.5	1.0	-0.6	1.0	-1.0	0.6	0.2	-1.8	-8.0	2.9	0.0	-3.8	-3.7	-1.0	0.0	11.5*	-0.6	4.0
Standard error	1.4	2.3	2.4	2.0	2.4	1.3	1.3	3.2	0.5	4.6	4.4	1.9	1.4	4.9	4.5	1.7	2.8	3.0	3.2	5.3
Age 17	51.7	1.5	-3.7	1.3	0.6	1.7	-1.6	-1.5	0.7	-3.4	3.6	-6.6*	4.0*	2.4	0.9	-4.9*	4.0	-1.9	8.1*	-0.9
Standard error	1.3	2.1	2.2	2.1	2.2	1.3	1.3	3.5	0.6	4.4	3.5	2.0	1.4	3.9	3.0	1.4	3.8	3.7	3.3	4.3

*Denotes a significant difference from the nation.

TABLE 9. Children on a Playground: Percentage of 9-Year-Olds Using Each Drawing Characteristic

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Percentage Acceptable																				
Age 9	42.6	-9.6*	1.5	5.1*	1.8	1.5	-1.4	-19.6*	4.1*	-8.8*	-13.6*	-2.8	7.9*	-18.5*	-3.8	3.5	-1.9	-10.0*	11.7*	4.8
Standard error	1.3	2.1	2.3	2.4	1.8	1.2	1.1	2.1	0.7	4.3	4.6	2.0	1.5	4.1	3.5	1.8	2.3	4.4	3.2	4.1
At Least Three Figures																				
Age 9	96.7	-1.1	0.4	0.1	0.4	-0.8	0.7	-5.0*	0.9*	-0.6	-9.8	-0.7	1.2*	-4.7	0.4	0.5	-0.9	-0.4	1.3	1.9*
Standard error	0.4	0.6	0.6	0.6	0.7	0.5	0.4	1.6	0.3	1.9	5.6	0.7	0.4	3.1	1.1	0.5	0.7	1.3	0.8	0.7
Objects Present																				
Age 9	81.6	-1.5	1.9	-3.6	3.1	-3.2*	2.9*	-10.2*	2.3*	-8.5	-3.3	-0.4	2.5*	-14.0*	-12.9*	2.9	2.1	7.4*	4.1	0.2
Standard error	1.5	2.4	2.5	2.1	2.0	1.0	1.0	2.5	0.8	4.8	4.0	2.0	1.2	4.7	3.2	1.6	2.8	3.7	4.5	4.2
Figures Higher																				
Age 9	77.8	-5.8*	-3.9*	4.0*	4.4*	-1.1	1.0	-13.3*	2.9*	-3.3	-10.0	-0.8	4.1*	-15.0*	0.3	1.6	-0.9	3.1	-5.7	0.6
Standard error	1.0	1.7	1.8	1.6	1.6	1.0	0.9	2.7	0.6	4.8	5.7	1.7	1.2	4.3	2.7	1.2	2.3	3.0	3.0	3.2
Figures Smaller																				
Age 9	44.8	-8.4*	1.3	4.7*	1.4	2.6*	-2.4*	-21.0*	4.1*	-10.3*	-13.5*	-3.1	8.5*	-19.4*	-4.1	3.6*	-1.6	-11.0*	11.7*	5.4
Standard error	1.3	2.0	2.3	2.2	1.9	1.2	1.1	2.2	0.8	4.5	4.5	1.8	1.6	4.3	3.2	1.7	2.4	4.8	3.4	4.6
Figures Overlapping Objects																				
Age 9	18.0	-3.1	1.1	-0.1	1.7	1.3	-1.2	-4.6*	1.1*	-4.9	-4.7	0.4	0.9	-5.4*	-9.2*	3.5*	0.2	-0.5	2.1	-1.0
Standard error	1.5	1.9	2.2	1.8	2.6	0.8	0.7	2.0	0.4	3.7	3.7	2.2	1.2	2.1	1.7	1.7	2.3	4.2	2.9	2.5
Point Perspective																				
Age 9	1.5	0.4	-0.1	0.7	-0.9*	0.5	-0.4	-1.4*	0.2	0.0	-1.5*	0.1	0.2	-1.3*	1.3	-0.5	0.0	-0.4	1.5	0.3
Standard error	0.3	0.6	0.5	0.6	0.4	0.2	0.2	0.3	0.1	1.1	0.3	0.4	0.4	0.4	1.2	0.4	0.8	0.9	1.6	0.8
Figures Overlapping Figures																				
Age 9	0.8	-0.1	-0.4	0.1	0.3	0.2	-0.2	-0.5	0.2*	-0.1	1.5	-0.5	0.2	-0.6	-0.7*	0.2	-0.2	-0.4	0.1	0.7
Standard error	0.2	0.3	0.3	0.4	0.4	0.2	0.2	0.3	0.1	0.7	1.5	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.5	0.9

*Denotes a significant difference from the nation.

TABLE 10. Running Person: Percentage of Students With Acceptable Scores of at Least Five Points

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
Age 9	20.7	-5.1*	-1.8	2.7	3.0	4.6*	-4.5*	-11.7*	2.9*	-10.0*	-0.6	-0.1	6.7*	-12.9*	-4.2	-0.4	0.1	-2.7	3.6	8.7*
Standard error	1.1	1.6	1.9	1.9	1.7	0.9	0.9	1.7	0.5	3.6	4.0	1.7	1.3	2.2	2.9	1.6	2.6	2.7	2.8	3.5
Age 13	38.3	-11.4*	3.6	4.2*	2.0	2.3*	-2.2	-13.9*	2.3*	-10.6	-8.9*	-2.1	7.4*	-7.0*	-7.3	0.2	-3.2	-3.2	7.9	6.3
Standard error	1.4	2.3	2.4	2.1	2.6	1.1	1.1	2.9	0.7	5.4	3.1	1.5	1.2	3.0	4.4	1.7	2.4	4.5	4.6	3.8

*Denotes a significant difference from the nation.

TABLE 11. Running Person: Percentage of Students Showing Motion With Legs

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
No Legs Shown																				
Age 9	1.8	-0.3	0.8	0.4	-0.9	0.0	0.0	3.5*	-0.7*	-1.5*	-0.8	-0.1	-0.5	0.5	0.1	-0.4	-0.5	1.9	-0.7	1.5
Standard error	0.4	0.6	0.9	0.6	0.5	0.3	0.3	1.3	0.3	0.4	0.8	0.7	0.4	1.0	0.8	0.5	0.7	1.7	0.7	1.2
Age 13	3.0	1.1	-0.5	0.2	-0.7	0.3	-0.3	2.6	-0.5	0.7	0.1	-1.1	0.7	1.6	0.6	-0.4	1.7	-2.0*	-0.8	0.5
Standard error	0.4	1.0	0.7	0.6	0.7	0.4	0.4	1.3	0.3	1.5	1.2	0.6	0.4	1.3	1.2	0.5	1.6	0.6	1.0	1.0
No Motion, Legs Straight, Unbent																				
Age 9	15.5	5.0*	-2.4	-3.9*	2.0	-0.8	0.8	7.0*	-1.3*	4.9	8.1	2.2	-2.7*	6.0	-1.9	-0.4	0.2	-3.2	2.8	-1.9
Standard error	0.8	1.4	1.2	1.2	1.5	0.9	0.9	2.1	0.4	3.7	5.1	1.8	1.2	4.3	2.0	1.1	2.0	3.4	2.4	3.2
Age 13	6.8	1.9	0.4	-2.2*	0.4	0.2	-0.2	4.1*	-0.9*	7.9	-0.1	-0.5	-1.2	1.1	-1.9	0.0	0.8	4.1	-1.2	-2.4
Standard error	0.7	1.3	1.3	0.9	1.2	0.6	0.5	1.8	0.3	5.7	1.9	0.8	0.7	2.2	1.4	0.9	1.6	2.6	1.8	1.4
Scissor Position, But Unbent																				
Age 9	49.5	-2.2	3.6	0.3	-1.7	0.1	-0.1	-4.4	0.7	5.5	0.4	2.6	-3.6*	8.1	9.1*	1.7	-1.2	-4.4	-4.5*	-7.6*
Standard error	1.3	2.3	2.2	2.4	2.0	1.6	1.6	2.7	0.6	4.7	5.6	2.2	1.8	4.2	3.5	1.5	2.7	3.4	2.0	3.3
Age 13	24.4	4.6	-0.8	-2.0	-1.1	0.0	0.0	6.2*	-1.0*	4.7	9.3*	-1.2	-1.9	5.0	8.7*	-0.5	-1.1	2.1	-3.9	-3.1
Standard error	1.1	2.8	1.5	1.7	1.7	1.0	1.0	2.2	0.4	3.3	3.7	1.6	1.5	3.5	4.0	1.3	1.8	4.6	2.2	3.0
Legs Parallel as in Jumping																				
Age 9	26.3	-3.8	-1.3	3.6	0.5	-1.1	1.1	-4.2	1.2	-10.6*	-8.8*	-4.4*	6.8*	-10.8*	-5.7*	-1.2	0.1	3.6	2.4	9.3*
Standard error	1.2	2.5	2.5	1.9	1.6	1.1	1.1	2.7	0.6	3.2	3.4	1.9	1.6	3.4	2.7	1.5	2.9	2.4	2.2	3.4
Age 13	44.2	-5.4*	1.1	2.1	1.4	-3.0*	2.8	-9.8*	2.1*	-9.2	-5.8	2.5	0.9	-7.4*	-7.9*	1.8	0.2	-5.7	3.8	3.4
Standard error	1.1	2.4	2.2	1.4	1.6	1.5	1.4	2.6	0.5	5.7	3.4	1.5	1.5	3.6	3.3	1.3	3.0	3.3	3.5	2.8
Both Legs Bent																				
Age 9	2.6	0.4	-0.7	-1.0	1.3	-0.3	0.3	-0.2	0.1	0.3	0.1	0.4	0.0	-1.4*	-0.5	0.0	-0.2	1.2	0.7	-0.4
Standard error	0.4	0.6	0.7	0.5	0.7	0.4	0.4	0.8	0.2	2.0	1.6	0.7	0.5	0.5	1.1	0.5	0.8	1.4	0.9	1.0
Age 13	8.6	-1.0	-0.4	0.0	1.3	0.2	-0.2	-3.3*	0.9*	-4.7*	-1.9	1.9	0.8	1.5	-0.6	-0.3	-2.5	2.5	1.5	0.4
Standard error	0.7	1.2	1.3	1.1	1.2	0.6	0.6	1.3	0.3	1.6	1.6	1.2	0.8	2.3	2.3	0.9	1.6	2.6	2.4	2.0
Both Legs Bent and Running																				
Age 9	2.9	0.2	-0.5	0.8	-0.5	1.6*	-1.6*	-1.8*	0.3	-0.4	0.2	0.0	0.7	-1.7	-0.3	0.7	-0.3	-1.3	-0.1	0.4
Standard error	0.6	0.7	0.7	1.3	0.8	0.6	0.6	0.8	0.2	1.8	1.2	0.7	0.7	0.9	1.3	0.9	1.1	1.2	1.0	1.2
Age 13	11.2	-2.1	-0.7	2.7*	-0.4	2.3*	-2.2*	-1.5	0.0	-4.8*	-3.9	-1.4	2.5*	-2.5	-1.1	-0.5	0.4	-0.1	0.5	2.9
Standard error	0.8	1.3	1.7	1.0	1.3	0.9	0.9	1.8	0.3	2.2	2.1	1.3	0.9	2.0	2.3	0.8	1.7	2.1	2.6	2.0

*Denotes a significant difference from the nation.

TABLE 12. Running Person: Percentage of Students Showing Motion With Arms

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
No Arms																				
Age 9	3.0	1.7*	1.0	-0.2	-2.0*	0.5	-0.5	5.0*	-0.9*	-0.2	0.8	-0.4	-0.3	2.7	0.9	-0.2	0.6	-1.6*	0.1	-1.8*
Standard error	0.4	0.7	0.9	0.6	0.5	0.3	0.3	1.4	0.3	1.8	1.7	0.7	0.5	1.6	1.2	0.5	1.0	0.8	1.1	0.7
Age 13	2.8	0.8	-0.6	1.0*	-1.3*	-0.1	0.1	1.3	-0.2	0.5	3.7*	0.7	-1.1*	1.2	1.3	0.3	0.0	-1.7*	-0.7	-0.3
Standard error	0.3	0.7	0.6	0.5	0.5	0.4	0.4	1.0	0.2	1.2	1.5	0.5	0.4	1.2	1.0	0.5	1.0	0.6	0.9	1.1
Arms Appear Limp																				
Age 9	7.8	0.3	-1.2	1.0	-0.2	-0.6	0.6	5.1*	-1.1*	5.6	3.2	1.2	-1.6	4.5	-0.1	1.2	-2.2	0.8	-0.8	-2.0
Standard error	0.7	1.2	1.2	1.2	1.1	0.6	0.6	1.3	0.3	3.7	2.9	1.2	0.9	2.3	1.7	0.9	1.3	2.2	1.5	1.5
Age 13	6.8	4.1*	0.0	-3.0*	-0.3	-1.1	1.1	3.9*	-0.7*	9.2*	1.4	-0.7	-1.3*	0.4	3.1	0.3	3.6*	-4.2*	-3.1*	-1.2
Standard error	0.7	1.4	1.3	0.9	1.1	0.8	0.7	1.6	0.4	4.0	2.4	0.8	0.5	1.7	1.8	0.8	1.3	1.1	1.4	1.4
Parallel Arms, Bent																				
Age 9	84.1	-3.3	-0.4	-1.0	4.0*	-2.6*	2.6*	-9.3*	2.0*	-5.3	-2.8	-1.1	2.0	-6.6	2.3	-1.0	-0.3	0.4	2.4	1.7
Standard error	1.0	1.9	2.1	1.4	1.5	0.8	0.8	2.4	0.5	4.4	3.4	1.7	1.2	3.5	1.6	1.2	2.1	3.9	2.4	3.0
Age 13	77.9	-2.8	-2.6	3.3*	1.3	-1.0	0.9	-2.5	1.0	-10.1*	-3.2	0.4	1.4	0.6	-4.6	1.3	-1.3	6.1*	-1.4	-3.6
Standard error	1.0	2.1	1.9	1.4	1.5	0.9	0.8	2.2	0.5	4.0	3.2	1.1	1.0	2.9	2.4	1.4	1.8	2.9	2.9	2.5
Both Arms Bent: One Forward, One to the Back																				
Age 9	3.8	0.7	0.1	0.4	-1.0	2.3*	-2.2*	-1.0	0.3	-2.0	-2.1	1.0	0.7	0.0	-2.1*	0.3	0.0	-1.8	-1.0	3.4
Standard error	0.5	0.9	0.8	0.8	0.9	0.4	0.4	1.0	0.2	1.3	1.2	1.0	0.6	2.2	0.9	0.6	1.0	1.3	0.9	2.0
Age 13	10.8	-3.0*	2.3	-0.6	1.2	2.4*	-2.3*	-4.4*	0.6	-5.0*	-4.3*	-0.2	2.3*	-2.8	-2.1	-1.7	-2.9*	0.6	5.2*	6.8*
Standard error	0.8	1.1	1.9	1.1	1.1	0.8	0.7	1.5	0.3	2.3	1.6	1.0	0.8	2.0	2.1	0.9	1.1	2.1	2.4	2.8

Denotes a significant difference from the nation.

TABLE 13. Running Person: Percentage of Students Showing Motion With Body

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Gradu-ated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
No Body Shown																				
Age 9	1.2	-0.4	0.4	-0.1	0.1	0.2	-0.2	3.0*	-0.5*	-0.8	-0.2	0.1	-0.3	3.6*	-0.3	-0.6*	-0.4	0.6	0.3	0.3
Standard error	0.2	0.3	0.5	0.3	0.4	0.2	0.2	0.9	0.2	0.5	0.8	0.5	0.3	1.2	0.5	0.2	0.4	1.0	0.8	0.5
Age 13	1.5	-0.4	0.5	0.2	-0.3	.2	0.2	0.3	-0.1	0.9	-0.4	0.6	-0.4	-0.1	-1.0*	0.5	-0.6	-1.1*	1.0	-0.4
Standard error	0.3	0.4	0.5	0.4	0.4	0.3	0.2	0.7	0.1	1.3	0.8	0.5	0.3	0.8	0.4	0.3	0.5	0.4	0.9	0.7
Body Erect																				
Age 9	72.1	5.7*	-0.7	-3.3*	-0.7	-4.2*	4.1*	4.7	-1.4*	12.1*	0.9	1.7	-5.1*	1.4	0.4	2.4	-1.9	0.2	0.9	-7.3*
Standard error	0.9	1.7	1.6	1.3	1.7	0.9	0.9	2.4	0.5	4.2	4.3	2.1	1.4	4.5	3.0	1.4	1.9	2.5	3.2	3.4
Age 13	71.9	8.6*	-7.6*	-1.3	1.1	-2.4*	2.3*	6.6*	-0.3	-2.3	2.3	2.8	-3.5*	4.9	0.7	C.3	0.0	0.5	-5.9	2.5
Standard error	1.4	2.1	2.5	2.2	2.4	1.0	1.0	2.6	0.7	6.4	3.2	1.7	1.6	3.7	5.0	1.6	3.1	4.2	3.6	3.3
Body Leaning as in Motion																				
Age 9	25.3	-5.8*	-0.2	3.7*	1.2	3.6*	-3.5*	-7.8*	2.2*	-13.1*	-1.6	-1.2	6.1*	-4.4	0.8	-1.4	0.3	-3.0	-0.6	8.3*
Standard error	1.0	1.8	1.8	1.5	1.9	0.9	0.9	2.1	0.5	3.9	3.9	2.1	1.4	3.9	3.0	1.5	2.3	3.5	3.4	3.5
Age 13	24.9	-9.1*	6.3*	1.8	0.1	2.8*	-2.6*	-8.6*	1.0	-4.0	-4.2	-3.1	5.3*	-5.4	-1.9	-0.7	0.1	1.3	4.9	-0.4
Standard error	1.3	2.1	2.2	2.2	2.4	1.0	1.0	2.5	0.7	6.3	2.8	1.6	1.6	3.1	4.1	1.6	3.4	4.5	3.7	3.4

Denotes a significant difference from the nation.

TABLE 14. Running Person: Percentage of Students Showing Motion With Expressive Devices

	National	South-east	West	Central	North-east	Male	Female	Black	White	No High School	Some High School	Graduated High School	Post High School	Low Metro	Extreme Rural	Small Places	Medium City	Main Big City	Urban Fringe	High Metro
No Expressive Devices Present																				
Age 9	62.1	9.3*	-1.4	1.1	-7.4*	-5.1*	5.0*	16.1*	-4.8*	4.5	0.1	1.3	-5.7*	12.9*	8.5	3.4	-4.3	-3.4	-9.0*	-4.7
Standard error	1.3	1.7	2.2	2.5	2.3	1.0	0.9	2.4	0.7	4.9	6.1	2.3	1.6	4.8	5.9	2.2	3.0	4.7	3.4	3.9
Age 13	43.6	6.4*	-1.2	-2.1	-2.3	-1.2	1.1	11.7*	-1.9*	3.5	7.2	-0.9	-3.0*	3.5	1.6	1.1	3.5	-3.4	-0.5	-8.4*
Standard error	1.2	2.3	2.1	1.6	2.3	1.2	1.2	3.2	0.7	5.8	4.5	1.7	1.1	4.3	4.4	1.6	3.5	3.1	4.1	2.7
One Expressive Device Used																				
Age 9	29.2	-7.5*	-0.7	0.7	6.0*	4.5*	-4.4*	-11.1*	2.0*	-4.0	-2.4	-2.1	4.5*	-3.6*	-6.4	-3.3	2.4	-1.3	8.3*	7.4*
Standard error	1.2	1.9	1.7	2.2	2.1	1.1	1.0	2.1	0.6	4.3	4.2	2.0	1.7	4.1	4.4	1.9	3.0	3.2	2.7	3.1
Age 13	38.1	-2.9	1.3	1.9	-0.9	0.8	-0.7	-5.9*	1.2*	-5.8	-4.8	2.2	0.2	-0.3	1.8	-1.8	-0.6	5.9	-2.7	4.6
Standard error	1.1	2.0	2.0	1.8	2.0	1.2	1.2	2.9	0.5	5.9	4.2	1.6	1.3	3.4	4.4	1.3	3.1	4.1	2.6	3.0
Two Expressive Devices Used																				
Age 9	6.5	-2.1*	0.9	-1.5	2.5*	0.2	-0.2	-4.2*	0.8*	-1.4	-2.5	1.4	1.8*	-2.8	-0.2	0.3	-0.7	2.0	1.6	-1.8
Standard error	0.6	0.8	1.1	0.9	1.1	0.5	0.5	0.9	0.2	2.5	1.7	1.1	0.9	1.6	2.4	0.7	1.0	2.2	1.9	1.3
Age 13	14.7	-3.2*	-1.4	0.4	3.8	0.5	-0.5	-6.6*	1.4*	-3.9	-3.9	0.7	4.0*	-3.7	-4.3*	0.7	-2.9	-1.1	3.3	3.7
Standard error	1.1	1.5	1.9	1.6	2.2	0.9	0.9	1.6	0.4	3.9	2.3	1.5	1.3	2.5	2.1	1.2	2.3	3.5	3.6	2.9
Three or More Expressive Devices Used																				
Age 9	0.9	-0.3	0.8	0.0	-0.4	-0.1	0.1	-0.9*	0.2*	-0.9*	3.9	-0.1	0.1	-0.9*	-0.9*	-0.1	0.6	0.5	-0.3	0.5
Standard error	0.2	0.4	0.6	0.3	0.3	0.2	0.2	0.2	0.1	0.2	2.8	0.3	0.3	0.2	0.2	0.3	0.5	0.8	0.4	0.7
Age 13	1.8	-1.2*	0.3	0.4	0.3	0.0	0.0	-0.9	-0.1	0.7	-0.8	-0.4	0.1	-0.1	-1.3*	0.1	-0.5	-0.5	-0.1	1.9
Standard error	0.4	0.4	0.8	0.5	0.8	0.4	0.3	0.6	0.2	1.6	0.6	0.4	0.3	1.0	0.5	0.5	0.6	0.8	0.8	1.8

*Denotes a significant difference from the nation.

TABLE 15. Percentage of Students Successfully Completing Drawings Within Each Background-Information Category

		Do Art				Art Taught		Art Museum			Learn Art (Classes)			
	National	None	1-2	3-4	5-10	Yes	No	Never	Once	5 or More	None	1	2-3	4-6
Age 17														
Bedroom	61.2	55.8	59.0	61.8	65.3	62.4	35.2	49.6	60.4	65.6	52.3	54.2	64.6	72.7
Standard error	1.5	3.6	2.2	2.2	2.7	1.5	6.6	3.0	2.4	2.1	3.0	3.4	2.1	3.2
Table	50.9	40.1	47.4	52.7	60.2	51.3	40.5	46.4	45.8	56.1	45.2	50.3	52.3	56.5
Standard error	1.6	3.1	2.2	2.2	2.6	1.6	8.7	2.9	2.6	2.1	2.6	2.7	1.8	4.2
Age 13														
Bedroom	54.9	51.2	49.4	55.7	57.7	55.6	44.8	49.6	56.6	56.8	49.8	54.1	58.3	
Standard error	1.6	6.6	2.6	2.5	2.0	1.6	7.3	2.8	2.2	2.4	2.7	2.7	2.3	
Table	41.9	26.6	37.5	38.8	48.9	42.4	35.3	35.4	43.3	45.4	38.3	40.0	46.0	
Standard error	1.4	5.2	2.6	1.9	2.3	1.4	3.5	2.1	2.3	2.3	2.2	2.3	2.0	
Running person	38.3	36.6	35.8	38.2	39.9	38.1	41.0	35.3	36.2	41.6	35.3	35.9	41.6	
Standard error	1.4	4.8	2.5	1.9	1.9	1.4	7.3	2.5	2.2	1.7	2.8	1.6	2.3	
Age 9														
Bedroom	39.9	35.2	39.9	47.1		40.6	27.5	34.9	41.7	43.3				
Standard error	1.7	2.1	2.2	2.6		1.7	7.8	2.4	2.2	2.5				
Table	22.9	14.3	23.0	32.9		23.4	16.4	19.3	26.1	24.5				
Standard error	1.1	1.3	1.8	2.3		1.2	3.0	1.5	1.8	2.3				
Running person	20.7	13.8	22.3	26.9		20.8	20.0	20.1	20.2	22.3				
Standard error	1.1	1.4	1.9	2.0		1.2	2.8	1.4	2.1	1.9				
Playground	42.6	35.2	43.0	51.0		42.9	38.1	42.6	42.0	43.2				
Standard error	1.3	1.7	1.9	2.3		1.3	2.5	1.9	2.4	2.0				

APPENDIX B

BACKGROUND QUESTIONS

DO ART

9-Year-Olds

Outside of school, what kinds of art work do you do? Tell whether you do each of the following things.

A. Outside of school, do you draw?

- ⬭ Yes
- ⬭ No
- ⬭ I don't know.

B. Outside of school, do you paint?

- ⬭ Yes
- ⬭ No
- ⬭ I don't know.

C. Outside of school, do you make collages by cutting and pasting paper, cloth and scrap materials?

- ⬭ Yes
- ⬭ No
- ⬭ I don't know.

D. Outside of school, do you carve or make models with wood, stone, clay, metal or plastic?

- ⬭ Yes
- ⬭ No
- ⬭ I don't know.

DO ART

13- and 17-Year-Olds

Outside of school, what kinds of art work do you do? Tell whether you do each of the following things outside of school.

		Yes	No	I don't know.
A.	Drawing	⬭	⬭	⬭
B.	Painting	⬭	⬭	⬭
C.	Making pictures by cutting and pasting paper, cloth and scrap materials	⬭	⬭	⬭
D.	Carving or modeling in wood, stone, clay, metal or plastic	⬭	⬭	⬭
E.	Print-making such as block printing, silk screening, etching	⬭	⬭	⬭
F.	Making pottery, ceramics or mosaics	⬭	⬭	⬭
G.	Weaving, macrame or knot-tying, or needlework such as embroidery, needlepoint, knitting, crocheting	⬭	⬭	⬭
H.	Making photographs or films	⬭	⬭	⬭
I.	Making jewelry	⬭	⬭	⬭
J.	Creating designs or plans for things like clothes, toys, cars, houses, furniture	⬭	⬭	⬭

ART TAUGHT IN THE SCHOOL

9-, 13- and 17-Year-Olds in School

Principals in each of the participating schools were asked the following question:

Is art taught in your school?

- ⬭ Yes
- ⬭ No

ATTEND ART CLASS

13-Year-Olds

A. Did you take an art class in school last year?

○ Yes ○ No ○ I don't know.

B. Are you taking an art class during this school year?

○ Yes ○ No ○ I don't know.

NOTE: Nine-year-olds were not asked this question.

ATTEND ART CLASS

17-Year-Olds

A. Please indicate in which of the following years you took art classes in school.

	Yes	No	I don't know.
Seventh grade	○	○	○
Eighth grade	○	○	○
Ninth grade	○	○	○
Tenth grade	○	○	○
Eleventh grade	○	○	○
Twelfth grade	○	○	○

B. Are you currently enrolled in art class?

○ Yes ○ No ○ I don't know.

VISIT ART MUSEUMS

9-, 13- and 17-Year-Olds in School

A. The works of artists are shown in art museums and art galleries. How often have you visited art museums or art galleries?

○ Never

○ One time

○ About five times

○ About ten times

○ Fifteen or more times

U.S. Government Printing Office: 1977-779-446/192 Region 8

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